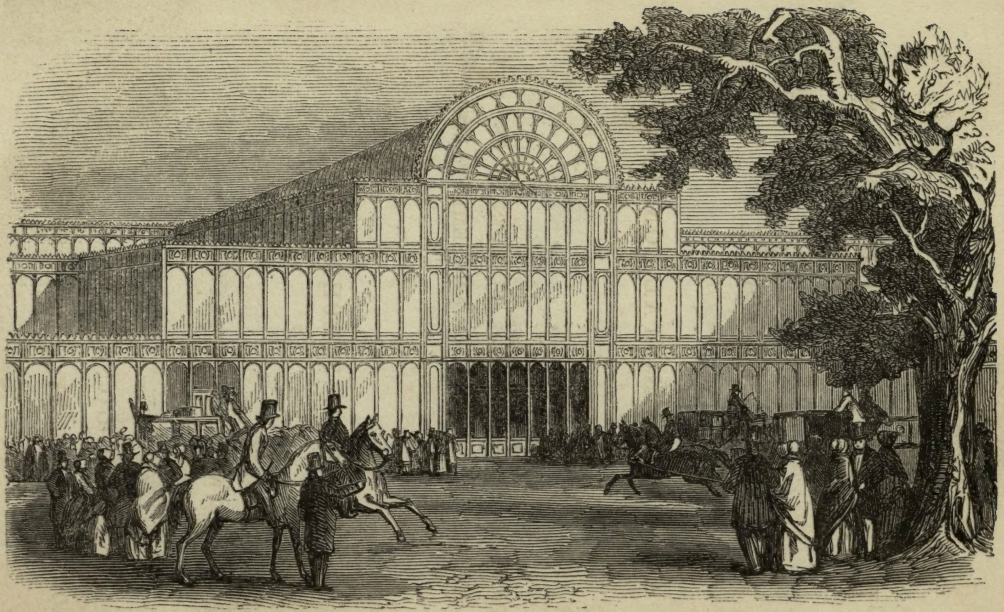

THE TRANSEPT OF THE GREAT EXHIBITION PALACE,

As seen from Prince's Gate

THE

GREAT EXHIBITION;

ITS PALACE,

AND ITS PRINCIPAL CONTENTS.

WITH

NOTICES OF THE PUBLIC BUILDINGS OF THE METROPOLIS, PLACES OF AMUSEMENT, ETC.

BY

ROBERTS STEPHENSON.

WITH ILLUSTRATIONS.

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THE GREAT EXHIBITION:

ITS PALACE AND ITS PRINCIPAL CONTENTS.

THE great Industrial Exhibition of 1851 will stand out in history as one of the most important events in the progress of society. No other event, up to this period, has extended its interest over so large a surface of the globe, or engaged the anxious thoughts of so many of the human family. In every quarter of the world, men will have been employed in making preparations, collecting materials, and taxing their ingenuity and skill to compete in this mighty and peaceful contest. Millions of men, women, and children compose the armies in this battle of production, and thousands and thousands, throngs from all grades of society, will witness it, to derive gratification and benefit in a great variety of forms, while it will be presented to still greater numbers by the aid of pictures, by descriptions in the languages of the principal nations, and by each eyewitness becoming, as it were, a lecturer upon what he has seen, when he returns to his own country. Indeed, as far as civilization extends, there will hardly be a nook so obscure or a person so ignorant, as not to have heard something of this huge show. Besides the incalculable influence it must exercise on the taste, skill, knowledge, and commerce of the world, it will probably go far towards the suppression of wars; and it may be considered with very great propriety as the first real peace congress of the world, since nearly all the

principal powers of the earth will be represented, in many instances by the most eminent men in politics, science, literature, arts, manufactures, commerce, and skilled labour.

As Englishmen, we are proud that this great World's Fair takes place in our metropolis, but, as philanthropists, we are glad that it is so, because no other place would, perhaps, have afforded so many facilities for making so gigantic an experiment; indeed, no ordinary city could even provide accommodation for the vast congregation of visitors. But it is to our neighbours across the Channel that we must yield the honour of having originated and developed great Industrial Exhibitions, properly so called, gradually extending them from a local to a truly national character, and, by the exercise of the most liberal and enlightened views, succeeding in holding them upon a grand scale, and in giving them immense importance. This is very evident, from the able report of Mr. Digby Wyatt to the Society of Arts, after his mission to the French Exposition of 1849. In 1757, during the first French revolution, the Marquis d'Aveze, upon being appointed Commissioner of the late Royal Manufactories of the Gobelins, of Sévres, and of the Savonnerie, found that two years of neglect had reduced the workmen almost to starvation, while it had left the warehouses full of their choicest productions. To remedy these evils, he conceived the idea of using the chateau of St. Cloud, then uninhabited, as a bazaar for the exhibition and disposal, by lottery, of the large stock of tapestry, china, and carpets on hand in these establishments. He immediately obtained the consent of the government to his proposal, and, in a few days, says the Marquis, in his own account of his efforts, the walls of every apartment in the Castle were hung with the finest Gobelin tapestry; the floors covered with the superb carpets of the Savonnerie, which long rivalled the carpets of Turkey, and latterly far surpassed them; and the saloons decorated with the large and beautiful vases, the magnificent groups, and the exquisite pictures of Sévres china. The Chamber of Mars was converted into a receptacle for every kind of the most

beautiful services of porcelain, with a wheel of fortune in the centre of the saloon, containing tickets for the lotteries intended to be drawn. To relieve the immediate necessities of the workmen, the Marquis procured funds, by allowing a few persons to make purchases while he was pushing on his arrangements for the exhibition, but on the very day fixed for opening the bazaar, a decree of the Directory, banishing the nobility, obliged him to fly, and the project for the time failed, after having been seen only by a few of the higher classes.

What he had done, however, in his first effort as Commissioner of the three Government Manufactories, led the Marquis to think that, by similar means, he might accomplish great benefits for the higher manufactures and fine arts of his country; accordingly, on his return from banishment to Paris, in the commencement of the year 1798, he at once resumed his labours. On this second occasion the objects he collected were distributed in the house and gardens of the Maison d'Orsay, Rue de Varennes. In looking over the list of specimens which composed this exhibition, we must be struck by its entirely aristocratic nature. The richest furniture and *marqueterie* produced by Boule, Riessner, and Jacob; the finest clocks and watches by L'Epine and Leroy; the superb porcelain and china from the manufactories of Sévres, of Angoulême, and of Nast; the most elegant books, bound in the richest manners, and fully supporting the traditionary excellence of Grolier and De Thou; silks of Lyons; historical pictures by Vincent, David, and Suvé; landscapes by Hue and Valencienne; flowers by Vandael and Van Pankouck; and many other objects of an equally luxurious character, served to show upon what class of the community French manufacture had, up to the period of the Revolution, mainly depended for support. In the further progress and development of these expositions, we shall be able to trace the gradual expansion of the market and adaptation of the character of supply to the wants of the *masses*. The success which attended this second attempt, on the part of the Marquis d'Aveze, hastened the adoption of his idea by the government, as

supplying a truly laudable stimulant to manufacture, worthy of national recognition and support, and it thus led directly to the establishment of the first Official Exposition, which took place the same year, on the very spot in the Champ de Mars on which the army had held a triumphal show of the immense and splendid collection of Italian spoils. Six weeks after that *fête*, the *nation* erected the "Temple of Industry," and exhibited specimens of the blessings and advantages of *peace*. The Temple stood in the midst, while around it were arranged sixty porticos, filled with all that Paris and its vicinity could produce, either of use or beauty. The galleries remained open only during the three last complementary days of the year VI. of the Republic, 1798; but excited the greatest enthusiasm throughout the country. The system of intrusting the judgment on the merits of the several exhibitors to a jury composed of few men, the most distinguished in science and art, was at once adopted, and so satisfactorily has it been found to work, that it has been constantly acted upon up to the present time. Prizes were awarded for watches, mathematical instruments, printing, china, morocco, &c.

The success of this exposition was so great, that the government resolved to institute them annually, and to give them a national character; but, in spite of the circular of the Minister of the Interior to that effect, the political commotions of the times prevented the next exhibition from taking place till 1801, three years after, and then, perhaps, only in consequence of the great exertions made by the First Consul, who visited the factories and workshops of the principal towns of France, taking with him several distinguished men, stimulating all he saw to efforts for progress, and in many instances bestowing rewards. This second Official Exposition took place in the quadrangle of the Louvre, under elegant porticos prepared for the occasion. Notwithstanding the great difficulties in getting up this exposition, more than 200 exhibitors competed for the prizes; double the number of those who had done so at the previous one in 1798. Upon this occasion, ten gold, twenty silver, and thirty bronze

medals were awarded; one of the last being adjudged to the celebrated Jacquard. It is worthy of notice, that though the Jury of the Exposition especially commended carpets, china, fine printing, &c., they awarded prizes to improvements in the quality of wool as a raw material, and to excellence in woollen and cotton fabrics; thus early evincing the tendencies of these institutions to apply themselves to the interests of the masses.

The French government, still adhering to the idea of annual exhibitions, prepared for its third exposition in the following year, and it took place in 1802, on the same spot as its predecessor; though so little time had elapsed, between five and six hundred exhibitors competed for prizes, for it had been, says Mr. Wyatt, in his report, a period of extraordinary exertion and activity, and a development of a corresponding character was accordingly manifested. The most striking features of this year were the extended application of mechanical and chemical science to facilitate production, and the consequent great reduction in price of all articles of popular demand. One of the results of the popularity of these institutions was the establishment, shortly after the close of this exposition, of the *Société d'Encouragement*, which has aided, in an extraordinary degree, the inventive talent of France, and the application of abstract science to the requirements of manufacture. It is worthy of remark, that while in France the Society of Arts and Manufactures owes its existence to the interest excited by public expositions of the products of industry, in England, the establishment of corresponding exhibitions will probably be mainly owing to the influence of our Society of Arts and Manufactures.

The fourth French exposition took place in 1806, for which, a magnificent building was erected in front of the Hôpital des Invalides. On this occasion, the exhibitors had increased to more than 1,400, nearly three times the number of those of the previous exposition four years before; and it was found necessary to keep the doors open for twenty-four days, nearly four times as long as the previous exposition.

In every department of textile fabric, an amazing improvement had been effected. For the first time, appeared the printed cottons of Mulhausen and Logelbach. Silk thread and cotton lace, blonde, cloth, mixed goods, and, above all, the beautiful imitations of cashmere shawls, exhibited a perfection scarcely to be anticipated, if we take into account the terrible financial fluctuations of the period.

The manufacture of iron by the aid of coke, instead of charcoal, and that of steel by new and greatly-improved processes, supplied arms at once to the peaceful and the warlike, tools to the workman, and deadly weapons to the soldier.

The application of the power of transferring ornament from copper plates to the surface of porcelain, aided much in increasing the demand, and lowering the price of this most important article of domestic comfort.

Owing to wars and their troubles, it was not till 1819 that the fifth French Exposition took place, which was held in galleries constructed in the court of the Louvre. It opened on the *fête* of St. Louis, in honour to the restored king, and closed only the thirty-fifth day. The number of exhibitors was near 1,700, a slight increase on that of the previous exposition. On this occasion, improvements in metal-work were especially manifested in fine castings, rolled iron, anchors, tools of all kinds, plated articles, bronze, stereotype plates, oxides, as colouring matter for glass.

The sixth French Exposition took place in 1823, on the same spot as its predecessor, opening on the same day, August 25, and continuing for fifty days. The number of exhibitors was about the same as in 1819, being fourteen less; but the rewards were increased to 1,091, being 282 more than in 1819. Improvements in every description of production were manifest, but those in the construction of machinery were the most remarkable and important. On this occasion, was exhibited the model of the first French suspension-bridge for the river Rhone, designed by Messrs. Sêguin.

The next French Exposition was in 1827, in a building

of immense magnitude, opening on the 1st of August, and closing on the 1st of October. On this occasion, great improvements were made in the classification of articles, and the general arrangements of the exhibition. This year, the even and superior finish of many descriptions of goods showed a manifest improvement in their manufacture, while the great application of steam enabled the producer to supply them at reduced prices, which had very considerably increased both the home consumption and foreign trade. Thus the manufacture of merino, which, fifteen or twenty years before, had scarcely existed, had now increased to such an extent, that fifteen million francs' worth was annually disposed of. The shawl, silk, tulle, and blonde trades had also expanded in an equal manner. The application of machinery to making paper in endless lengths had affected the manufacture of paper-hangings, and enabled the superior French taste to rival and ultimately monopolize the favour with which, up to about this time, the English productions had been regarded. Improvements in plate-glass manufacture, and the revival of the processes of painting and staining that material, added another element to the resources of ecclesiastical decoration. The cultivation of raw silk had been extended to northern departments, and the processes of winding and throwing greatly improved. Cotton-printing for the million began to assume a gigantic development, and in ginghams particularly attracted attention.

The eighth French Exposition was held in 1834, in four pavilions, erected on the four sides of the Place de la Concorde, and remained open for sixty days. This year, there were nearly 2,500 exhibitors; there was a general advance in manufacturing skill; the display of products was magnificent, and the greatest interest was evinced in it by all classes.

Successful and brilliant as the last exposition had been, it was far surpassed by that of 1839, which was held in a grand hall, a gallery, and eight long apartments, affording an area of 120,000 square feet, erected in the Champs Elysées. There were no less than 3,281 exhibitors, of

whom 878 gained rewards. This year, the principal features were, in raw materials—native silk, nitre, marbles, French lithographic stones, fine wool, &c.; in machinery —the perfection of Jacquard looms, well-boring instruments, spinning apparatus, &c.; in manufactures—steel, glass, &c.; and in the arts—lithography, and engraving on wood, applied to the improvement of design in various branches of manufacture.

The views which have guided the Central Jury in their decisions on the products exhibited on this occasion, bear strong testimony to the increased extent of the French export trade, to the growing demand on the part of the public for goods at the lowest price, and to the consequent adoption by the manufacturers of the principle of 'large sales and small profits,' a system not previously very much favoured in France.

The tenth exposition took place in 1844, in a vast building, again erected in the Champs Elysées, in which 3,960 manufacturers exhibited their productions, of whom 3,253 were honourably noticed.

The eleventh and last French Exposition, took place in 1849, in a building erected in the Champs Élysées, covering more than five acres of ground, and in which the productions of 4,494 exhibitors were arranged for the inspection and delight of countless throngs.

In these last two expositions, an immense variety of raw material, machinery, and manufactures was exhibited. In every department, an advance on the previous exhibitions was manifest; an increase of taste was almost universally apparent; and cheapness of production seemed to have been an object of as earnest pursuit as those of quality and taste. Indeed, after these two expositions, France may well claim the high honour of having originated, cherished, and completely established National Industrial Exhibitions. It is true, that other nations have partially followed her example, but no other people have given them so systematic and regular a basis as one of their established institutions. The Bavarian and the Belgian governments have, within the last few years, instituted industrial exhibitions, in imitation of those of France,

and they have been attended with the most encouraging success and popularity. And in this country, during the last ten or fifteen years, there have been a great many local exhibitions of arts and manufactures, but they were all in the character of bazaars, to raise funds for particular objects, with the exception of the very limited exhibitions held by the Society of Arts last year. Manchester, Leeds, Birmingham, Dublin, and other towns have successfully held such bazaars, chiefly composed of the productions of the surrounding country; the one which most nearly approached the French Expositions, in the variety and extent of the national productions displayed, was the Great Free Trade Bazaar, held, for twelve days, in Covent Garden Theatre, in 1845, which not only was eminently successful as a bazaar, but excited the greatest public interest as an exhibition of our manufactures.

In February, 1849, M. Buffet, the French Minister of Agriculture and Commerce, addressed a circular to the Chambers of Commerce of France, proposing that specimens of skill in agriculture and manufactures from neighbouring nations should be admitted to their approaching exposition, and asking the opinion of the manufacturers upon the subject. The answers he received induced him to abandon the idea, when it was at once adopted by our Society of Arts, with Prince Albert at its head. It was, however, no longer confined merely to neighbouring nations, but, with the highest degree of enlightenment, it was extended to the whole commercial world. All our colonies, in every part of the globe, and all people, with whom we had commercial communication, were invited, upon perfectly equal terms with our own people, to join in one grand exhibition of the industry of man. At first, the real magnitude and the great difficulties of the project were not fully perceived, and the proposal was scarcely made public by the Society of Arts, before impediments began to rise up in their way, and for more than a year difficulty after difficulty beset them. Though they took the greatest pains to enlist our manufacturers generally, by sending competent agents and lecturers amongst them to explain its objects and its advantages to this

country, serious opposition to it existed until the middle of last year. Had the project been tried in France, it would have been carried through with far less difficulty, as it would have had the advantage of the power and purse of the government, which being utterly impossible with our habits of public action, it was absolutely necessary to make the proposition popular. When the time comes for giving a faithful history of its struggles, the Society of Arts will reap the enduring honour it deserves, and every one of its members who took an active part in pushing it on, will have ample reason to be proud of what he has done. And we do not say it in the spirit of sycophancy, because he is a prince, but in honest admiration of his manly conduct, to Prince Albert by far the greatest share of honour will be found due. To him, more than to any one else, we owe the adoption of the idea from the French minister, its generous and enlightened enlargement, and that courageous and persevering conduct, in all that related to the Exhibition, which has overcome every obstacle. Indeed, but for his great intelligence, his "habits as a man of business," his indomitable perseverance, and the enormous influence he wielded, from his high position, the plan would inevitably have failed. When, however, the Royal Commissioners had fixed upon the plan, and contracted for the construction of the Palace of Glass in Hyde Park, opposition began rapidly to die away, and to give place to an almost universal desire to promote the success of the Exhibition, and to make such arrangements as would best secure the comfort, amusement, and interests of the foreign visitors, whether contributors or mere spectators, from whatever part of the world they might come—in a word, to give them a hearty, honest, generous, John Bull welcome. Besides, as the multifarious preparations for this mighty exhibition have progressed, all the newspapers and periodicals have been so full of their details, so many publications have been started and devoted almost entirely to them, so much information has been diffused, and so much discussion has taken place with regard to the Exhibition, that it is now difficult to find any one who is not

enthusiastically in favour of it, and thoroughly convinced of the manifold advantages likely to be derived from it by ourselves and the whole civilized world. On the other hand, many manufacturers and merchants in foreign countries were at first exceedingly averse to the Exhibition of 1851, but, as with us, discussion and better information have led to more enlightened views. Prince Albert, in his speech at the York banquet, said, in the name of the Royal Commission:—"Although we perceive in some countries an apprehension that the advantages to be derived from the Exhibition will be mainly reaped by England, and a consequent distrust in the effects of our scheme upon their own interests, we must, at the same time, freely and gratefully acknowledge, that our invitation has been received by all nations with whom communication was possible, in that spirit of liberality and friendship in which it was tendered, and that they are making great exertions, and incurring great expenses, in order to meet our plans." Upon the same occasion, Lord Carlisle, one of the most enlightened men of the age, thought that "the promoters of this exhibition were giving a new impulse to civilization, and bestowing an additional reward upon industry, and supplying a fresh guarantee to the amity of nations. Yes, the nations were stirring at their call—but not as the trumpet sounds to battle; they were summoning them to the peaceful field of a nobler competition; not to build the superiority or predominance of one country on the depression and prostration of another—but where all might strive who could do most to embellish, improve, and elevate their common humanity."

And Lord John Russell said, "I participate with my noble friends who have spoken, in entertaining hopes of the brightest kind from the Exhibition of next year. I do so, because I think, as I have said elsewhere, that there are not only direct, but many collateral benefits likely to accrue from this project; and now, let it be remembered, we are about to try what can be effected by the arts of peace. Thirty-five years ago, the nations of Europe were emerging from a dreadful, costly, and sanguinary war;

in the course of this war, the various nations of Europe exhibited, let it be confessed, all the virtues of war—hardihood, enterprise, and fortitude, enduring, for the sake of national independence, the greatest and most painful sacrifices; they suffered all this because, whether war was wisely or unwisely entered into, national independence was felt to be the prize, for the preservation of which every effort should be made. But if the nations of Europe then exhibited, with scarcely an exception, those virtues which belonged to war, I think, after so many years of peace, it is now for us to show that there are advantages which can be gained from peace—that there are virtues which belong to peace; and, I trust, in the Exhibition of next year, we shall show that we can promote the comforts—that we can enlarge the knowledge—that we can strengthen the kindly affections of mankind towards each other, and produce effects which, great as were the virtues in war, will be far more profitable to the world generally, and more consonant with the lessons which we learn from religion and morals. I trust, therefore, we shall show, not only that peace has been victorious as well as war, but that those victories have a far clearer, purer glory than any that can be obtained by combat and the destruction of men by each other; and if we can accomplish this, not only this country, but the nations of the world, will have reason to be grateful to that Prince who has framed this project, who has persevered in it against all opposition, and who is about to reap the reward of exertions attended with no individual benefit, but with much labour to himself, but which have been dictated by a lively concern for the interest and earnest aspiration for the true welfare of mankind at large."

At a meeting in Birmingham, Mr. Cobden, in speaking of the advantages that might be expected to flow from this exhibition, said, "We shall by that means break down the barriers that have separated the people of different nations, and witness one universal republic; the year 1851 will be a memorable one, indeed: it will witness a triumph of industry, instead of a triumph of arms. We shall not witness the reception of the allied sovereigns

after some fearful conflict, men bowing their heads in submission; but, instead, thousands and tens of thousands will cross the Channel, to whom we will give the right hand of fellowship, with the fullest conviction that war, rather than a national aggrandizement, has been the curse, and the evil which has retarded the progress of liberty and of virtue; and we shall show to them that the people of England—not a section of them, but hundreds of thousands—are ready to sign a treaty of amity with all the nations on the face of the earth."

It is difficult to over-rate the advantages likely to arise from this great exhibition. There can be no doubt that the whole civilized world will derive from it corresponding benefits to those which have been experienced in France from her expositions, with regard to Agriculture, Manufactures, Machinery, the Mechanic Arts, Fine Arts, and the appliances of Science to the wants of practical life. But this exhibition must exert the most salutary influence in many ways, in which national exhibitions could have little or no effect. It will do much to teach the politicians, merchants, manufacturers, and labourers of different nations, that the whole commercial world constitutes one vast community, in which the true interests, advancement, and well-being of the people are as mutual and as much bound up together as those of the people of any one nation. For, in all probability, this is truly the first one of All Nations Exhibitions which are to follow it, and be held in other parts of the world. Already, the desire for such an exhibition has taken root with our brethren of the United States, and sooner or later these "go-ahead" people will be certain to accomplish it. Prussia, too, has already taken the hint, and contemplates the establishment of a permanent Museum of the finest and most remarkable productions of all nations, to serve as models for her national industry.

International exhibitions will not only remove those mischievous and absurd restrictions upon manufactures and commerce which were the offspring of former ignorance and animosity, but they will necessarily tend to a simple system of common arrangements for the

commercial world, which must greatly increase the facilities and consequent benefits of trade, especially with regard to Patent Laws and Customs Regulations.

One of the happiest influences of such exhibitions will be the great stimulus they will give to the study and diffusion of sound geographical knowledge. Everything in them that is beautiful, curious in construction, or in any way remarkable, will at once create such a permanent interest in the country producing it, as to excite a desire to know more of it; while the very catalogues and descriptions of the articles, with their pictorial illustrations, will serve as the best possible primers in geography. But, perhaps, by far the most beneficent result of these exhibitions will be the promotion of educational institutions among the artisans in every part of the world; for, however important to the advance of manufactures and the mechanic arts may be the contributions of scientific men, ingenious inventors, and artistic designers, the intelligence and skill of the workmen are absolutely necessary. The feeling of this necessity has already done much in the establishment of institutions and schools for the instruction of workmen in several countries, especially in France; and the spread and repetition of industrial exhibitions will do much more in this good work. The very position in which these exhibitions place the artisan and the products of his labour, is calculated to make him feel a just pride and to raise his self-estimation, which will necessarily create the desire for mental improvement.

Not the least in importance among the various beneficial results of this first great international exhibition, is the magnificent and wonderful building in which it takes place—a building of iron and glass, covering eighteen acres of ground, and growing up in all its strength and beauty so rapidly, that it seemed to rise almost by enchantment. This Crystal Palace will introduce a style of architecture, which will be a new and most important element in the appliances of civilization, this mode of building being not only eminently calculated for the

requirements of such exhibitions, but admirably suited, from its lightness and beauty, to a number of purposes; amongst others, winter-gardens and promenades near towns. Already, the Buckinghamshire Railway Company have contracted with the builders of the Crystal Palace for the erection of a new station at Rewley, Oxford, on the same principle. And Mr. Paxton, the inventor, has sent in his plan for an iron and glass roof over the area of the Royal Exchange.

We consider the building itself of so great importance, as to justify us in giving some notice of its origin. Not long after the appointment of the Royal Commissioners, the following document made its appearance:

"The Committee appointed by the Royal Commission to advise on 'all matters relating to the building,' having received the sanction of the Commission, are desirous of obtaining from all parties who are disposed to assist them, suggestions for the general arrangement of the buildings and premises required for this exhibition. Upon the general form of the building in plan, the distribution of its parts, the mode of access, and the internal arrangements and contrivances, will depend the convenience and general fitness of such a building; and it is upon these points that the Committee seek information and suggestions, and wish to encourage the most extended competition in the preparation of plans. The Committee do not propose to offer any pecuniary reward for such plans—they rely upon the desire which men of all countries will feel to forward the objects of the proposed exhibition. The Committee think it probable, that when the plans are received, they may not be limited to the selection of any one plan, but may derive useful ideas from many; and that the best plan may be determined upon by the help of this general assistance. As the credit of any such plan will be due solely to the contributors, the Committee propose to make a report, in which they will acknowledge, by name, those whose plans had been wholly or partially adopted, or who had afforded the most useful suggestions: and the Committee hope to be able to offer such other honorary distinction

to the successful contributors as the circumstances may appear to warrant. In order to guide the contributors in the preparation of such plans and designs, and to facilitate the examination and the comparison of them when received, the Committee have enumerated concisely the principal 'desiderata' for such a building, and have laid down certain rules and conditions, to which they earnestly request the contributors to conform, as the Committee will be under the necessity of abiding strictly by the regulation of not acknowledging any plans which may be sent in a form inconsistent with these rules."

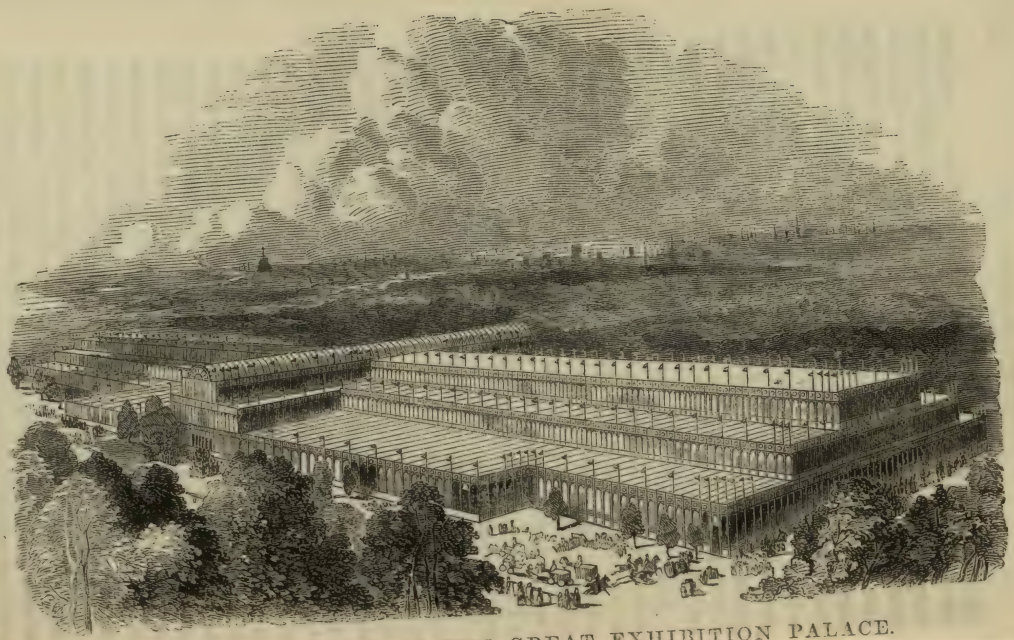
This brought forward two hundred and forty-five competitors for the honour of furnishing the desired plan; amongst whom were near forty foreigners. To three of the native and fifteen of the foreign plans, commendation was given; but no one satisfying the Committee, they perfected one for themselves, from the various suggestions afforded by the competing architects, adding on, "as their own exclusive contribution, a dome of gigantic proportions." This dome was so unpopular, and the contest about its site was so fierce, that the whole scheme of the Exhibition was in some danger. Mr. Paxton, the celebrated horticulturist at Chatsworth, seeing "the jeopardy of the undertaking, from the forcible arguments put forward against the plans proposed," and feeling that the principles he had adopted in the construction of his immense iron and glass house for the Victoria Regia, could be successfully applied to a building of unlimited extent, set himself to work, at the twelfth hour, to produce a plan which met all the requirements of the Committee, and avoided all the objections of the public. "It was not," says Mr. Paxton himself, at a meeting of the Derby Institute, "until one morning, when I was present with my friend Mr. Ellis, at an early sitting in the House of Commons, that the idea of sending in a design occurred to me. A conversation took place between us, with reference to the construction of the new House of Commons, in the course of which, I observed, that I was afraid they would also commit a blunder in the building for the Industrial Exhibition; I told him that I had a notion in

my head, and that if he would accompany me to the Board of Trade, I would ascertain whether it was too late to send in a design. I asked the Executive Committee whether they were so far committed to the plans as to be precluded from receiving another; the reply was, 'Certainly not; the specifications will be out in a fortnight, but there is no reason why a clause should not be introduced, allowing of the reception of another design.' I said, 'Well, if you will introduce such a clause, I will go home; and, in nine days hence, I will bring you my plans all complete.' No doubt, the Executive thought me a conceited fellow, and that what I had said was nearer akin to romance than to common sense. Well, this was on Friday, the 11th of June. From London I went to the Menai Straits, to see the third tube of the Britannia Bridge placed, and, on my return to Derby, I had to attend to some business at the Board Room, during which time, however, my whole mind was devoted to this project; and, whilst the business proceeded, I sketched the outline of my design on a large sheet of blotting-paper. Well, having sketched this design, I sat up all night, until I had worked it out to my own satisfaction; and, by the aid of my friend Mr. Barlow, on the 15th, I was enabled to complete the whole of the plans by the Saturday following, on which day I left Rowsley for London. On arriving at the Derby station, I met Mr. Robert Stephenson, a member of the Building Committee, who was also on his way to the metropolis. Mr. Stephenson minutely examined the plans, and became thoroughly engrossed with them, until at length he exclaimed that the design was just the thing, and he only wished it had been submitted to the Committee in time. Mr. Stephenson, however, laid the plans before the Committee, and at first the idea was rather pooh-poohed; but the plans gradually grew in favour, and by publishing the design in the *Illustrated News*, and showing the advantage of such an erection over one composed of fifteen millions of bricks and other materials, which would have to be removed at a great loss, the Committee did, in the end, reject the abortion of a child of their own, and unanimously recommended my

bantling. I am bound to say, that I have been treated by the Committee with great fairness. Mr. Brunel, the author of the great dome, I believe was at first so wedded to his own plan, that he would hardly look at mine. But Mr. Brunel was a gentleman, and a man of fairness, and listened with every attention to all that could be urged in favour of my plans. As an instance of that gentleman's very creditable conduct, I will mention, that a difficulty presented itself to the Committee as to what was to be done with the large trees, and it was gravely suggested that they should be walled in. I remarked, that I could cover the trees without any difficulty; when Mr. Brunel asked, 'Do you know their height?' I acknowledged that I did not. On the following morning, Mr. Brunel called at Devonshire-house, and gave me the measurement of the trees, which he had taken early in the morning, adding, 'Although I mean to try to win with my own plan, I will give you all the information I can.' Having given this preliminary explanation of the origin and execution of my design, I will pass over the question of merit, leaving that to be discussed and decided by others, when the whole shall have been completed."

The site of the Crystal Palace is in that part of Hyde Park which lies between the Kensington-road and the ride which is called Rotten-row, the centre of the building being opposite the Prince of Wales's Gate, a situation in all respects desirable, except, perhaps, that it is somewhat too near the road to afford the best effect from this principal approach to the Exhibition.

The ground-plan of the building is a parallelogram, 1,851 feet long, by 456 feet wide in the broadest part, with a transept of 408 feet long and 72 feet wide intersecting the building at right angles in the middle. The side walls rise in three steps; the outer wall rises from the ground 24 feet high; the second rises 20 feet higher, or 44 feet from the bottom of the pillars below; and the third rises 20 feet higher than the second, or 64 feet from the bottom of its supporting pillars, giving within the building a great central avenue or nave 72 feet wide, and



BIRD'S-EYE VIEW OF THE GREAT EXHIBITION PALACE.

on each side of it three avenues 24 feet wide, and two 48 feet wide, the transept being 108 feet high, to give ample room for the trees which remain under it. The roofs of the different sections of the main building consist of a series of ridges and valleys, of 8 feet span, running transversely, so that there is a valley at the top of each column. The transept has a semicircular roof, with a radius of 36 feet. The space occupied on the ground-floor is 772,784 square feet, and that of the galleries above 217,100 square feet, making together about 21 acres. The total cubic contents of the building are 33,000,000 feet.

There are four exits at the east end, four at the west, and six on the south side. The main entrances are three in number—one at the south end of the transept, nearly opposite the Prince of Wales's Gate, richly ornamented, extending along its entire breadth, with seven pairs of doors, each of eight feet span; the other entrances are at the ends of the centre aisle, each with nine doors of a similar width.

In the language of Mr. Paxton, the plan is so simple in all its parts and details, that "a section of one part shows the whole; for it is only by the multiplication of those parts that the stupendous structure is extended;" resting in every part on columns 24 feet apart, which form regular avenues throughout the building. As the whole safety of the edifice depends upon these columns, their construction and arrangement are of great importance. Unlike brick and stone walls, iron is a material which has its peculiar dangers as well as advantages. The columns are all hollow; it being well known to scientific men that a hollow pillar is much stronger than a solid one of equal gross diameter. Thus if two columns be taken of 30 feet diameter, both containing the same quantity of metal, the one hollow, 12 inches in diameter at the outer, and 10 inches in the inner portion, therefore being one inch thick, and the other solid, 6.63 inches in diameter; the solid pillar would break at a pressure of about 110 tons, while the hollow pillar would take about 440 tons to break it. Each of the columns is fixed in a

socket formed in a base or broad flange which rests upon a foundation of concrete. Iron plates are fixed round each of the columns, at about two feet from the lower end of the ties; and four vertical iron bars are firmly secured to the plates at the top, and to the projecting flanges of the column and socket at bottom. At each of the meeting angles there are altogether twelve sets of braces; there are likewise four sets of braces at each of the inner angles of the 24-feet walk or avenue. Under each of the gallery crossings, or passing-places, are four sets of diagonal ties, and in some of them an ornamented boss, introduced so that the screw ends and nuts are entirely concealed. The roof of each story is supported by girders and trusses resting upon four rows of columns, which divide the space longitudinally into the three avenues. Wrought-iron trusses or girders, fitted together on the ground, span transversely the 48 feet space, and cast-iron girders those of 24 feet. The wrought girders, which are of the same depth as the cast ones, viz. two feet, are slightly arched. Every part of the girder is so arranged as to diminish the strain upon the other parts—thus, by means of the cross bars, the top bar is prevented from falling in, in consequence of the weight placed upon it, whilst at the same time the bottom is prevented from throwing out, or making a lateral thrust, every part being adjusted with great nicety.

Had the ribs of the great arch been composed of iron, it would have made them too heavy. They are, therefore, composed of four layers of wood, the two central planks being 4 inches, and the two outer ones 2 inches thick. Around the arch so composed is placed, inside and out, two straps of iron curved to the proper extent, and the whole is secured together by iron bolts. These arches, it was found, were so composed as to prevent any undue tension or lateral thrust, being capable, by their own friction, of bearing all their weight without additional support.

There are 3,300 iron columns, varying from 14½ feet to 20 feet in height, 2,224 cast-iron girders, and 1,128

iron beams for the galleries, and about 900,000 superficial feet of glass, weighing 400 tons, wood only being used for sash-bars, joists, flooring, doors, and the boarding which covers the lower part of the building.

There are two important features in the building worthy of being prominently brought before the public: the provisions made for its proper ventilation, and for its drainage.

In the spaces or panels formed by the iron and wooden columns vertically, and by the sill and plate horizontally, are introduced the lower tiers of ventilators, originally intended to have been formed of luffer boarding; but the ventilators have been made in an improved form, have a light appearance, and are more easily opened or shut. Each frame of the lower tier of ventilators is constructed of $\frac{7}{8}$th deal, is 7 feet long, 4 feet 3 inches high, and $4\frac{1}{2}$ inches deep; being dovetailed at angles, and further strengthened behind by angle-ties. The blades or luffers are of sheet-iron, forming a flat S curve. Each blade is hung as a swing dressing-glass, with two $\frac{5}{8}$th inch pivots resting in proper bearings, fixed in the side of the frame. The blades, which are placed horizontally, are 6 inches from centre to centre; the whole being connected together by a vertical deal chamfered bar, by means of forked iron arms $3\frac{1}{2}$ inches long, and fixed to the sides of a sinking or groove in the vertical connecting-bar, which is 3 inches in width, and of sufficient length to embrace the eight blades. By the weight of a single pound, all the blades can be opened or shut at will, so that a simple lever apparatus will complete this important part of the construction. A wooden stop is introduced, both at top and bottom of the frame, to prevent the upper and lower blades from moving beyond their prescribed limits when closed. The construction of the upper tier of ventilators is similar to that of the lower, but, instead of eight blades, there are only five in each frame. The upper ventilators occupy the space above the close boarding, and are immediately behind the ornamental iron fanlights or panels. There are advantages from this mode of venti-

lation; it nicely distributes the admitted air, however large the volume of it, and effectually prevents the entrance of water in rainy weather.

The provision made for drainage required considerable skill in arranging, so that no portion of the gutters, extending over an area of roof of from 18 to 20 acres, should at any time be overflown, however heavy might be the rain falling upon it. The ridge and furrow plan of roofing requires that every length, both of longitudinal or transverse furrow or gutter, should be so formed, as to carry off half the rain-water received into it from the skylights in one direction, and the remainder in the other direction. This is effected by "cambering" every length of gutter, which not only secures this important condition, but also prevents the "sagging" or sinking of the timber below its proper level; thus each gutter-plate is considerably curved upward, and looking along under a continuous line of skylights, the effect is very striking. The surface water from the skylights is received into the longitudinal or three-way gutters, and these again empty themselves into the framed transverse gutters at either end. The hollow iron columns act as rain-water pipes, in conveying the water from the roof into the cast-iron drain-pipes, running in parallel lines along the whole length of the building, and which have each a sectional area of 28¼ square inches.

The flooring on the ground-floor consists of boards, 9 inches wide, laid half an inch apart, on sleepers, so as to permit the dust in sweeping to fall through the spaces between the boards; and this necessary operation will be rapidly performed by a moveable hand-engine, immediately followed by a sweeping-machine, consisting of brooms, fixed to an apparatus on light wheels, drawn by a shaft.

From north to south, and across the breadth of the structure, the flooring is perfectly level; from west to east it will be slightly inclined, like the stage of a theatre, though not, of course, to the same extent. This will add much to the effect of the interior, by enabling visitors at the lower end to see almost at a glance over the whole edifice.

Though from north to south the flooring is quite horizontal, the land slopes a little, and thus enables the architect to give the building on that side the appearance of a raised foundation, which will be faced with green sod. The advantage of this to the external beauty of the principal *façade* is great.

It is thought that the building will be one of the dryest ever constructed, since it would always be acting on the principle of a still. Any exhalation that might arise from the soil underneath the floor would naturally rise till it came in contact with the glass at the top; on any alteration of the temperature it would be condensed on the glass, and must again trickle down by capillary attraction, and find its way to the small groove prepared on each side of the Paxton gutters, and then be eventually carried away into the sewer; so that any evaporation would never have the power of returning, because the moment it got condensed on the surface of the glass or sash-bars, it could only escape through the gutters. The grooves not only take away the water, but, supposing a pane not to be sufficiently tight in the groove, any small quantity of water that might escape through the edge of the glass and get underneath, by the same principle of capillary attraction, would find its way to the groove, and then pass away. The transept-roof and the skylight-bars were not only placed horizontally with respect to the vertical part of the arch, they were "herring-boned;" in fact, they were angular, both horizontally and vertically at the same time. So that in the transept-roof, from top to bottom, the same principle of capillary attraction will be at work and provided for; and every skylight is arranged on a slope of $2\frac{1}{2}$ to 1, which is the same as in the horizontal roof.

The exterior surface of the first or ground tier is of wood, for the purpose of greater security, and also to afford a wall space for such articles as require to be hung up in order to be seen to advantage.

Another feature of the building is the refreshment-courts, which are divided into three classes. Those whose means and taste incline them to patronize the first will

discuss the delicacies provided for them under the branches of the trees, which occupy the north end of the transept; those whose habits of life are less expensive, or whose palates are less nice, will be accommodated westward; while for the crowd of visitors the requisite accommodation will be provided on the north-east side of the building.

For safety from fire, a 9-inch water-main, charged constantly with a 70-feet column of water, has been laid; and from it 6-inch pipes run all round the building, with 16 branches into the interior; so that an immense quantity of water could be poured on with hose. An engine has been put up specially at the Chelsea Water-works, and the company have undertaken to supply, if needed, 300,000 gallons a day. There are nineteen windows, with doors adjoining, which overlook the whole edifice, so as promptly to discover anything wrong.

Besides the immense space thus devoted to the purposes of the Exhibition, there is on the north side of the building a room set apart for the reception of machinery. The dimensions of this department are on a scale proportionate to the important branch of inventive industry to which it is to be dedicated. It is 946 feet long, 48 feet broad, and 24 feet high. The engine-house stands at the north-western side of the Glass Palace, and will furnish steam to the extent of one hundred horse-power to the models within the building. Its steam will print off copies of a newspaper, work all kinds of looms, and in fact, do more at once than steam from any single boiler has ever accomplished.

An Electric Telegraph is constructed in the building, to enable those employed officially to communicate with each other, with the greatest possible facility, and without any running about and confusion.

Messrs. Fox and Henderson, of Birmingham, are the builders, who, after a meeting with great iron-founders, glass-blowers, &c., contracted to complete its erection by the specified time, at a cost of £79,800, if the materials are given up to them after the exhibition; or £150,000, if the building remains. Mr. Paxton furnished all the

necessary details of the construction very minutely, from the concrete filling of the holes in the ground, under each support, through the base-plate, the columns, the connecting-pieces, to which were attached the girders for the galleries, the second and third sets of columns, and the roof-trusses, the box-gutters, and the "Paxton" gutters; which latter were intended to provide at the same time for conveying away the rain from the roof, and the condensed moisture from the inside. Details were also given of the mode of conveying the rain-water, &c., into the adjoining sewers; of the supporting columns; of the ventilation, by means of sets of louvres of galvanized cast-iron; of the supply of water for the extinction of fire, and for the supply of the fountains; and of the experiments for testing the girders and trusses, by the hydraulic press erected in the building, by which the strength of the whole was proved before they were used.

Messrs. Fox and Henderson's tender was only verbally accepted on the 26th of July, 1850; possession of the site was obtained on the 30th of July; the first column was fixed on the 26th of September; and the building, though not completed in all its details, handed over on the 1st of January to the Royal Commissioners.

As no brick and mortar were used, and all the proportions of the building depended upon its iron pillars and girders, nearly all the materials arrived on the spot ready to be placed and secured in their destined positions. Yet vast operations were necessary, even then, in its construction, and called forth the most admirable display of scientific ingenuity, systematic arrangements, and great energy. Hardly any scaffolding was used, the columns, as they were set up, answering their purpose. Machines for performing all the preparatory operations required to be done on the spot were introduced in the building, and some of them invented for the occasion.

Such, for instance, as the sash-bar machine, gutter machine, the mortising machine, the painting machine, the glazing machine, and other ingenious contrivances for economizing labour. Indeed everything in the pro-

gress of the building was conducted with such consummate skill, system, and energy as to excite the admiration, and frequently the surprise of the throngs who for a considerable period daily visited it. Though more than two thousand workmen were employed in the different departments of construction, the greatest order and regularity prevailed, almost without noise. It was often a most animating spectacle to see so many men busily employed in the various operations tending to the rapid accomplishment of the great design, with groups of visitors watching with intense interest, in one part the sawing machine, in another the sash-grooving, in a third the glaziers, in another the placing of a column or fixing of a girder, and in the transept an immense gang of men raising the enormous ribs, which was perhaps the most difficult of all the diversified operations of the building. When the first two of these ribs were elevated to their proper position in the transept, Prince Albert attended to witness the experiment; upon his departure, at the ringing of a bell, the whole of the men engaged on the building came swarming forth and formed themselves into a semicircle round his carriage to give him a hearty huzza as President of the Society of Arts. At the same moment a brewer's dray with two hundred and fifty gallons of beer made its appearance according to orders previously given by his Royal Highness, the cheers for whom were not at all the less hearty on account of the unexpected treat. As the work approached its completion, her Majesty upon several occasions accompanied Prince Albert, making private and quiet visits to the building, and manifesting great interest and pleasure in what she witnessed.

Throughout the progress of the building it has been visited by many of the most distinguished persons in the country, and the contractors finding that the numbers who flocked to it impeded in some degree their operations, determined to make a charge of five shillings for admission, the proceeds of which were to constitute an accident-relief fund for the workmen. A very considerable sum was so raised, though the number of accidents

has been very small, and the nature of the accidents not at all serious. Some idea of the number who flocked to see the exterior may be formed from the fact, that on one Sunday at least 100,000 persons entered the gates of Hyde Park.

The deep interest felt in the Industrial Exhibition by the operative classes generally was manifested in a remarkable manner in connection with the work of the building, large portions of which were done by the piece; no difficulty was found in procuring any amount of hands from time to time required; whilst such has been the enthusiasm of artisans in various parts of the country, that many even left their work, and journeyed to London, ambitious of assisting with their own hands to raise this beautiful Palace of Industry. Every morning the workmen assembled in great numbers at the entrance, ready for employment, and when engaged they turned out very efficient hands.

The enthusiastic feeling excited by the World's Industrial Exhibition has given rise to the following poetical effusion, by Martin F. Tupper, which breathes so generous a spirit, and one so proud of the position which this exhibition gives the artisan, that we cannot resist its insertion:—

Hurrah! for honest Industry, hurrah for handy Skill!
Hurrah! for all the wondrous works achieved by Wit and Will!
The triumph of the Artisan has come about at length,
And Kings and Princes flock to praise his comeliness and strength.

The time has come, the blessed time, for brethren to agree,
And rich and poor of every clime at unity to be;
When Labour, honoured openly, and not alone by stealth,
With horny hand and glowing heart may greet his brother Wealth.

Aye, Wealth and Rank are Labour's kin, twin brethren all his own,
For every high estate on earth, of labour it hath grown;
By duty and by prudence, and by study's midnight oil,
The wealth of all the world is won by God-rewarded toil.

Then hail! thou goodly gathering, thou brotherhood indeed!
Where all the sons of men can meet as honest labour's seed;
The tribes of turban'd Asia, and Afric's ebon skin,
And Europe and America, with all their kith and kin!

From East and West, and North and South, to England's happy coast,
By tens of thousands, lo! they come, the great industrial host—
By tens of thousands welcomed for their handicraft and worth,
Behold! they greet their brethren of the Workshop of the Earth.

Right gladly, brother workmen, will each English Artisan
Rejoice to make you welcome all, as honest man to man;
And teach, if aught he has to teach, and learn the much to learn,
And show to men in every land, how all the world may earn!

Whatever earth, man's heritage, of every sort can yield,
From mine and mountain, sea and air, from forest and from field;
Whatever reason, God's great gift, can add or take away,
To bring the worth of all the world beneath the human sway;

Whatever Science hath found out, and Industry hath earned,
And Taste hath delicately touched, and high-bred Art hath learned;
Whatever God's good handicraft, the man He made, hath made;
By man, God's earnest artisan, the best shall be displayed!

O think it not an idle show, for praise, or pride, or pelf,
No man on earth who gains a good can hide it for himself;
By any thought that anything can anyhow improve,
We help along the cause of all, and give the world a move!

It is a great and glorious end, to bless the sons of man,
And meet for peace, and doing good, in kindness while we can;
It is a greater and more blest, the Human heart to raise
Up to the God who giveth all, with gratitude and praise!

When the whole structure was elevated, and its outline completed, every beholder was struck with its grandeur and extreme simplicity; we have met no one indeed who did not fully agree with Professor Cowper in looking upon the original idea of Mr. Paxton as one of the most successful efforts of imagination and contrivance, and in considering the way in which Messrs. Fox and Henderson have rendered the bold conception practicable, as one of the most astonishing and successful examples of contrivance, science, industry, and engineering skill the world has ever known. And whatever wonders it may contain, the structure itself is the greatest wonder of all.

"Not the least wonderful part of the Exhibition," says an eloquent writer in the *Times*, "will be the edifice within which the specimens of the industry of all nations

are to be collected. Its magnitude, the celerity with which it is to be constructed, and the materials of which it is to be composed, all combine to insure for it a large share of that attention which the Exhibition is likely to attract, and to render its progress a matter of great public interest. A building designed to cover 753,984 superficial feet, and to have an exhibiting surface of about 21 acres, to be roofed in, and handed over to the Commissioners within little more than three months from its commencement; to be constructed almost entirely of glass and iron, the most fragile and the strongest of working materials, to combine the lightness of a conservatory with the stability of our most permanent structures—such a building will naturally excite much curiosity as to the mode in which the works connected with it are conducted, and the advances which are made towards its completion. Enchanted palaces that grow up in a night are confined to fairy-land, and in this material world of ours the labours of the bricklayer and the carpenter are notoriously never-ending. It took 300 years to build St. Peter's at Rome, and 35 to complete our own St. Paul's. The New Palace of Westminster has already been 15 years in hand, and still is unfinished. We run up houses, it is true, quickly enough in this country; but if there be a touch of magic in the time occupied, there is none in the appearance of so much stucco and brick-work as our streets exhibit. Something very different from this was promised for the great edifice in Hyde Park. Not only was it to rise with extraordinary rapidity, but in every other respect is to be suggestive of 'Arabian Nights' remembrances."

The decoration of the building has been wholly intrusted to Mr. Owen Jones, and everything in this department has been executed according to his designs, and under his immediate superintendence. When he first executed specimens of his plan of painting the building, they excited a good deal of criticism and opposition, and a number of persons did not hesitate to condemn his proposal of using bright colours. Of late years, the employment of colour, and its appreciation,

have made rapid strides on the continent, while we have lagged rather far behind; which is the more remarkable, as our painters hold a high position as colourists. Architects in this country are only now beginning to turn their attention to the subject, and that, which was the result of science and study on the part of Mr. Jones, was rashly condemned by those who had, at all events, less knowledge, and had given little attention to the matter.

"Of many of the geometrical forms and combinations," says Mr. Jones, "depending entirely on colour for their full development, we are too apt to consider that which we find established around us as the right; but, however deeply rooted the puritan prejudices on colour, we are fast shaking them off, and when we do so completely, there is no reason to fear that England will be behind other nations in the race, as she may, we trust, make up by the increased energy, industry, and superior perseverance of her sons, when once earnestly set to work, the time lost in the commencement of the struggle." He considered that the grandeur of effect produced by the great repetition of simple forms in the building might be still further enhanced "by a system of colouring, which, by marking distinctly every line in the building, should increase the height, the length, and the bulk." In this edifice there can be little variation of light and shade, and without the employment of bright colours, the immense number of similar lines of the building, falling one before the other, would lose all distinctness, and form one dull cloud overhanging the Exhibition, rendering it impossible to distinguish in the distance one column from another, and injuring the general effect produced by the objects collected in the Exhibition. He has, therefore, employed for the internal painting blue, red, and yellow, in such relative proportions as to neutralize each other, and thus, no one colour being dominant to fatigue the sight, all the exhibited objects will assist, and be assisted, by the colours used on the building itself. Mr. Jones considered the best mode of using these colours was, "to place blue, which retires, on the concave surfaces;

yellow, which advances, on the convex; red, the colour of the middle distance, on the horizontal planes, and the neutral white on the vertical planes." He has therefore painted the under-sides of the girders red, the round portions of the columns yellow, and the hollows of the capitals blue, in due proportions. All the stalls are covered with red cloth, or pink calico; by which means, not only is the unsightly woodwork concealed, but a warmth of colouring is thus given to the whole ground area of the building, which, combined with the mass of blue over-head, and the yellow stripes on the columns, produce a most harmonious effect, all of which is softened by covering the roof and south side with unbleached calico, to prevent the glare of light which would necessarily take place in a building whose roof and sides are chiefly of glass. Since the painting has been completed, and bright articles introduced into the structure, the result has clearly proved that Mr. Jones has proceeded on sound scientific principles, as he has certainly succeeded in producing the best possible effect. He has also displayed great knowledge in his profession, by the judicious distribution of various large articles, and groups of articles, with a view to their effect upon the general internal aspect of the Exhibition. The whole edifice is surrounded with ornamental railings, which harmonize admirably with the peculiar and light appearance of the vast structure.

The safety of the structure has been much discussed, in consequence of adverse opinions expressed by Mr. Turner, who constructed the immense conservatory in Kew Gardens, and the still more important opinion of Professor Airey, the Astronomer Royal, that the building was not sufficiently secure, and he feared it would some day come tumbling about the ears of the people like a pack of cards. But the question has been set at rest in the most satisfactory manner by the application of tests far beyond any strain which could arise from the densest possible packing of visitors in the galleries. The first experiment was made in the presence of her Majesty and Prince Albert, the immediate object of which was to

ascertain, by various tests of the severest character, to what extent oscillations could be conveyed to the gallery by the regular motion of a living load, and to ascertain whether the provisions which had been made to meet such contingencies were sufficient.

The preparations made for the experiment consisted of the construction of a perfect bay of gallery, with its floors, binders, girders and connecting pieces, in every respect complete, and similar to the actual gallery, supported upon four points, bedded on temporary foundations. Rows of planks the full width of the platform led up to it, and down from it, so that a row of men as wide as the gallery might be able to march up and down in close column. Three hundred workmen were first assembled by the contractors, and allowed to cover the platform and the planks connected with it. They were then compressed into the smallest space upon which they could stand.

The load borne on the planks represented the share of pressure which would be produced by the crowding of adjacent bays of gallery. The amount of deflection produced by this load was inappreciable. The men then walked regularly and irregularly, and ran over it. The elasticity of the floor, allowing play to the timbers and the wrought-iron work, was admirably developed by this test; and it became apparent that this quality of elasticity was of the greatest value in protecting the cast-iron girders from sudden shock.

Thus, in the severest test which could possibly be applied, when the men standing closely packed together continued jumping simultaneously for several minutes, although in the regular vibrations of the floor the binders played up and down, the extreme deflection of any of the girders did not exceed one-fourth of an inch. As the contractors' men were unable to keep military time in their step, and it was considered desirable to ascertain the effect of perfectly regular oscillations, the whole of the corps of Royal Sappers and Miners on the ground, set in close columns, were marched several times over and around the bays, and were finally made to mark time in the most

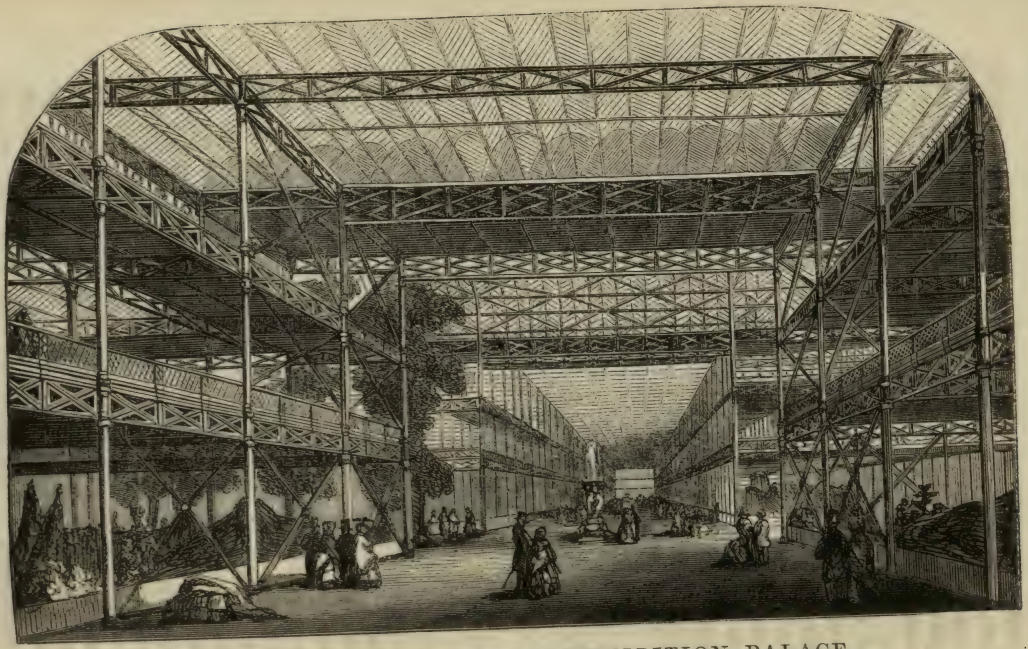
trying manner. With the result of this last test, the eminent scientific men present expressed themselves highly gratified, observing that while at the climax of vibration, the motion did not exceed that common in ordinary London houses at evening parties. A minute examination of the platform, made immediately after the completion of the experiments, showed that no part of the construction had in any way suffered injury.

But as it was of the greatest possible importance that not the shadow of a doubt should exist as to the strength of the galleries, another trial was instituted. Messrs. Maudslay and Field, the eminent engineers, suggested a method for setting the question at rest, beyond all cavil and timidity. Accordingly, seven frames were made, each capable of holding thirty-six cannon-balls of 68 lbs. each. In this way a pressure of $7\frac{1}{2}$ tons was readily obtained, and as it was ascertained by Mr. Brunel, that the greatest weight which could be obtained by packing men as closely as possible on any given space was 95 lbs. to the square foot, such a test, representing 100 lbs. to the square foot, was considered amply sufficient to establish the strength and security of the galleries. The pressure of an ordinary crowd, such as that in a pit of a theatre or at a meeting, does not exceed from 50 lbs. to 60 lbs. to the square foot; and it must be remembered that as a great part of the gallery space will be occupied by light articles displayed on stalls, the number of spectators that can circulate there at one time must be limited. Moreover, the passages are made to run at the sides close to the pillars, where the strain is least likely to be dangerous. Bearing all these things in mind, the experiment made with 252 68-pounders must be considered conclusive. As in their wooden frames they were rolled along by the united strength of a large party of Sappers, the pillars and girders betrayed no sign of weakness, and the flooring of the gallery did not vibrate nearly as much as that of a drawing-room during a ball. The Executive Committee and the principal members of their staff watched the experiment with great interest, and were, as everybody has been since, perfectly satisfied.

Before leaving this part of our subject, we must not neglect to inform the visitor that the Crystal Palace ought to be viewed from a distance, in order to be fully appreciated in its external grandeur. The approaches by the Kensington-road and Rotten-row are entirely too close to afford a proper view. The best points for a spectator are the drive along the Serpentine and the bridge over it. There, the distance, the height of the ground, and the open space, enable the eye to take in a considerable portion of the building. The trees even then shut out part of the prospect, but enough remains to captivate the beholder. The vast extent of ground covered by the structure, the transparent character of its walls of glass, its terraced elevations, the airy abutments, "the large transept, with its arched and glittering roof shining above the great vitreous expanse around it, reminding one of nothing ever heard of before," are seen from these points to the greatest advantage, and the sight of them will well repay a visitor for any little additional trouble he may take in seeking these points of view.

INTERNAL ARRANGEMENTS, &c.

Upon entering the Exhibition, the vast extent of the scene, the countless variety of objects, the gay colours, glittering cases, and bright surfaces, the red tables in all directions, the painted forest of columns, the flags of many nations, gigantic statues, fountains, the mellow light everywhere diffused, the throng of people, and the low hum of voices, create a sense of bewildering and overpowering grandeur. As this wears off, we feel the real magnificence of the great structure, and the surpassing beauty of effect produced by the arrangements of the different articles along its vast and simple lines. By degrees we begin to distinguish particular parts; we look along the outstretched nave at the colossal statues, colossal lion, horse, and dog, gigantic telescopes, pillars of granite and of coal, great fountains, enormous dome of glass and iron, cast at Coalbrook Dale, splendid



INTERIOR OF THE GREAT EXHIBITION PALACE.

tents, and a balloon, trophy formed of Canadian timber, trophy of silk manufacture from Spitalfields, a display of feathers, immense crystals of alum, a great pillar of polished rock-salt, crystals of spermaceti oil, which cost £1,000, mighty organs, models of ships, of churches, of the Liverpool Docks, of Plymouth Breakwater, of Britannia Bridge, of the great Russian chain-bridge over the Dnieper, and of the Crystal Palace itself. We look at the walls, and are struck with admiration at the display of splendid carpets, rugs, tapestry, paper-hangings, skins of wild animals, and the trophies of various articles tastefully arranged. By degrees, we perceive the marked difference of character in the productions from different parts of the world, and we soon become sensible of the wisdom of the Commissioners in making the basis of the arrangement of articles their geographical origin. But the whole grandeur and beauty of arrangement are most striking in the view from the galleries, looking down upon the compartments, stretching out in all directions, filled with an interminable variety of objects, and upon the gazing hive of people, of every country, sex, age, and condition, in perpetually-changing groups.

Clear passages under the galleries of eight or ten feet run the entire length of the building. At the sides of the passages, under the galleries, the tables are kept low, others gradually rising in height behind them. The effect of this mode of distributing the articles, is to form one of the most pleasing and attractive *coups d'œil* of any in the building. Upon the extreme north and south sides, there are also longitudinal passages of eight or ten feet in width, the former interrupted by the offices of the Commissioners and the entrances, and the latter by the refreshment-rooms. Independent of the transept, there are eight transverse passages, running completely across the building, those at the eastern and western extremities being interrupted by the entrances at those points. The arrangements observed by exhibitors with respect to passages required for their own convenience and the more effectual display of their articles, are such as conduce to the general effect. The view of the central

passage is almost uninterrupted; counters projecting into the great central passage being built up no higher than four feet at top,—some rise in steps from the ground.

With the exception of the offices, staircases, entrances, refreshment-courts, and the various avenues and passages, including the transept, 72 feet wide, the whole of the ground-floor and galleries may be said to be available space for exhibitors. All the foreign countries, including the United States of America, are on the east side of the transept, both on the ground-floor and in the galleries; whereas the United Kingdom, the East Indies, and the British colonies, are on the west side thereof, with the exception of the United Kingdom, whose dominion is extended into parts of the north and south galleries, on the east side of the transept. The productions of England and the colonies occupy thirty separate sections. Of the four main divisions into which it is divided, machinery occupies the north side, raw materials and produce the south side, and manufactures and the fine arts the centre. Along the central passage, to the west of the transept, a frontage upon each side of seven bays, or 168 feet, is occupied by the productions of the colonies. Adjoining the colonies, and upon the north side of the passage, are placed articles included in the section of paper, printing, and bookbinding. By the side of these are placed furniture and upholstery, decorations, paper-hangings, and papier-mâché. Manufactures in mineral substances, used for building or decorations, as in marble, slate, porphyries, cements, artificial stones, &c., are placed next in order. Manufactures in leathers, skins, furs, and hairs, occupy the next position; and adjoining to them are the cotton manufactures; and to printed, dyed, woven, and felted fabrics, is allotted the space next to that of cotton. Crossing the western extremity, and retracing his steps upon the south side of the central passage, the visitor will arrive at the place allotted to mixed fabrics, and pass on to that assigned to woollen and worsted manufactures—next to the space occupied by flax and hemp, and the linen manufactures, which will be immediately opposite to those

of cotton. Adjoining the linen manufactures are articles of cutlery, edge-tools, and surgical instruments, including locks and grates; and by the side of the latter are displayed glass, china, pottery, and ceramic goods, with the colonial products adjoining. Mining, quarrying, metallurgy, and mineral products are placed along the southern passage, and the space between them and manufactures is occupied to a great extent by agricultural implements. Jewellery, and the greater proportion of silks and velvets, with lace, embroidery, and other light and fancy wares, are placed, as far as practicable, in the galleries. Such are the general features of the arrangements of British and colonial articles. Foreign productions occupy nineteen sections to the east of the transept.

The space for Arabia and Persia is situate on the north side of the central avenue, having a frontage thereto of 24 feet, and running back on the east side of the transept 60 feet; having, therefore, an area of 1,440 superficial feet on the ground-floor, with an additional space of 576 feet in the gallery immediately above.

China, on the south side of the central avenue, has a frontage thereon of 48 feet, running southward, and next to the transept 84 feet, having a space on the ground-floor of 3,744 superficial feet, besides 576 feet in the gallery.

Brazils and Mexico, on the south side of the central avenue, contiguous to China, an irregular space, with a frontage of 24 feet on the central avenue, and another frontage on transept, also of 24 feet, at the north end of the offices of the Executive, having 7,488 superficial feet on ground-floor, with 1,920 feet in the gallery above.

Turkey, on the north side of the central avenue, with a frontage thereto of 24 feet, and extending back to the refreshment-court at the north end of transept, having an area of 7,488 feet, with 1,344 feet in the gallery above.

Greece, on the east side of Arabia and Persia, having a frontage of 24 feet on the central avenue, and a depth of 48 feet, giving an area of 1,152 feet, with an additional space in the gallery above of 576 feet.

Egypt, on the east side of Turkey, 1,920 superficial feet, with 576 feet in the gallery above.

Italy, an irregular space, with a frontage of 48 feet on the north side of the central avenue, and running back to near the north entrance of the building, having an area on the ground-floor of 11,712 superficial feet, and 960 feet in addition in the gallery above.

Spain and Portugal, with a frontage of 48 feet on the north side of the central avenue, having an area of 2,880 superficial feet in the ground-floor, and 768 feet in the gallery above.

Switzerland has a frontage of 48 feet on the south side of the central aisle, running quite back on the south front of the building, close to the offices of the Executive Committee, having an area of 6,912 feet, with 960 feet in the gallery above.

France has a frontage of 168 feet on the north side of the central avenue, and 216 feet frontage on the south side of the same—in the former case running back to the north side of the building, and in the latter case to the south side thereof; containing, on the ground-floor, 78,912 superficial feet, added to which, in the gallery immediately north of the central aisle, there is an additional floor-space of 3,840 feet, and in the gallery immediately south of the central aisle 5,184 feet.

Belgium has a frontage of 48 feet on the north side of the central avenue, and a similar frontage on the south side of the same, and runs back in the former case to the north side of the building, and in the latter on the south side of the building; the total area on the ground-floor being 22,240 feet, with 1,344 feet in each of the galleries above.

Holland has a frontage of 24 feet on the north side of the central avenue, and runs back 116 feet, having an area of 2,784 feet on the ground-floor, and 384 feet superficial in the gallery above.

Austria has a frontage of 96 feet on the north side of the central avenue, running back to the north front of the building, and a frontage of 120 feet on the south side of the central avenue, running back to the south front of

the building, and containing on the ground-floor 34,272 superficial feet, and in addition 1,920 feet in the gallery north of the central aisle, and 2,112 feet in the gallery south of the central aisle.

The Zollverein has a frontage of 96 feet on the north side of the central avenue, and extends back to the north front of the building, and a similar frontage on the south side of the same avenue, having an area on the ground-floor of 42,048 superficial feet, and in the north galleries over the central aisle 4,032 feet, and in the south gallery next central aisle 4,608 feet.

North Germany has a frontage of 24 feet on north side of central avenue, with a depth of 60 feet, and on the south side of central avenue a frontage of 24 feet, running back 108 feet, and having an area of ground-floor of 6,336 feet, and in the gallery north of central aisle 1,344 feet, and on the south of same aisle 1,152 feet.

Denmark has a frontage of 24 feet on central aisle, by a depth of 28 feet, containing an area of 672 feet only.

Norway and Sweden together have a frontage of 48 feet on the south side of the central avenue, by a depth of 60 feet, giving an area of 2,880 superficial feet on ground-floor, with an addition of 1,344 feet in the gallery above.

Russia has a frontage of 32 feet on the north side of central avenue, and of 24 feet on the south side thereof, having an area on the ground-floor of 11,424 superficial feet, together with 1,728 feet in the gallery north of central aisle, and 768 feet in the gallery south of central aisle.

The United States of America have a frontage on north side of central aisle of 136 feet, with a depth to the refreshment-court near the north-east angle of building of 136 feet, and running on the north side of the eastern entrance to the end of the building, and a frontage of 120 feet on south side of central aisle, and running back to the south front and east end of building, and having an area on ground-floor of 51,264 feet. The United States have the largest amount of gallery space of any of

the foreign countries, extending into each of the four galleries, and occupying the whole of the return gallery at the east end of the building, amounting to 19,584 feet.

This geographical arrangement, with that of placing fine arts and manufactures in the middle, and raw materials and heavy articles back, is altogether most successful. Each kind of produce is thus exhibited in such a manner that it can be readily compared with its like, and the contrast may be made local, so that districts which manufacture particular descriptions of goods, are in some degree pitted against each other. The whole Exhibition thus presents a series of displays of national industry, each methodically arranged, and forming, for the purposes of comparison, a perfect exhibition within itself. From this distribution many advantages will arise to the intelligent spectator, who will not fail thereby to detect the strong and weak points in the productive power of the various countries represented. He has also thus placed before his eyes a chart of the course and impulse of trade all over the world; of the developments of which it is capable, and of the direction in which these may be most safely pointed. The limits within which competition can be profitably carried on, not only between localities, but between nations, will here receive a clearer elucidation than they have ever yet had. The latent wealth of the world will be revealed, and commerce taught to satisfy her demands from new sources. Another general rule observed by the Committee in the arrangement of the Exhibition is, that raw material and produce — the least attractive portions of the display— are disposed at the sides, articles belonging to superior manufactures and the fine arts are brought prominently in view by being ranged all along the centre of the building, their richness and splendour of colour and form will thus be shown to the greatest advantage, and the effect will be still further increased by the advantage of the geographical arrangement which places the productions of the tropical regions nearest to the transept, and removes the less

gaudy but more useful industry of colder regions to the east and west ends.

The orderly arrangement of every contribution, and the subordination of each part and object to the idea of one great and systematic display, forces upon the mind a deep interest in that combined operation by which the Crystal Palace at once becomes a perfect epitome of the world's industry—a daguerreotype likeness, struck off in one moment, of the true "*organisation de travail.*" Not only are the different characters of the articles from different parts of the world very discernible, in their texture, fashion, and style of execution, but there stand the exhibitors or their representatives, often the very producers themselves, so marked and peculiar in their physiognomy, dress, and manners, as at once to tell the visitor the origin of most things he may look upon.

During the preparations in the arrangements and placing of the articles in the Exhibition, the scene was often most curious and interesting. Along the transept and middle of the nave, carts and drays, drawn by huge horses, made their appearance loaded with packages, which were promptly removed to their destined positions, and frequently accompanied by strange-looking guardians; all over the floors and up in the galleries, carpenters, English and foreign, were busily at work constructing counters and stalls, and putting up cases; others, as various in appearance as the packages they unpacked, were engaged in bringing forth and examining the newly-arrived articles; custom-house officers were keenly performing their watchful functions; the officials of the building and a few favoured visitors were satisfying their curiosity, perhaps in earnest gazing at some striking article just unfolded from its carefully-packed bed; red-coated sappers and miners were everywhere actively moving about, aiding in the unloading, placing, &c., of the packages as they arrived; in various parts of the building workmen were employed in its completion; glaziers were seen through the glass roof above crawling about to stop crevices and replace broken glass; while as

far as you could catch the sounds of voices, the words of many languages, and of a copious variety of the English met the ear, producing a strange, but, with us, far from unpleasing effect. And as we viewed this new scene, we could not help reflecting how arduous and difficult a task the Commissioners and their officers must have had, in meeting unseen difficulties, the ceaseless demands, the most natural little jealousies, the whims, and caprices, and misconceptions of exhibitors and their agents, which necessarily must arise in arrangements so multifarious and so complicated, through which the most perfect order and regularity had to be attained. It is, however, most honourable to all concerned, that difficulties have been removed, demands satisfied, jealousies soothed, whims and caprices kindly dealt with, and misconceptions patiently explained away, so as to produce a wonderful degree of satisfaction and harmony. And the exhibitors, on their part, have generally manifested a praiseworthy disposition to conform to every suggestion in their arrangements, especially of coloured articles, calculated to add to the general effect. And it was by no means an easy task to produce the best general effect while the geographical allotment was preserved, and the various articles were placed, in most cases, according to their systematic classification into four divisions and thirty sections.

In pointing out the position of each section, we shall begin with agricultural implements, which occupy a section of very considerable extent on the south side. The lighter contributions in the department of civil engineering are placed in the gallery at the extreme west, while the heavier specimens are on the ground-floor to the north. Philosophical and medical instruments are exhibited in the west gallery, and in those running along each side of the centre aisle. Models of naval architecture are disposed of in the side gallery looking northwards. The exhibition of precious metals is placed in the front gallery, on the south of the centre aisle. The same gallery holds the collection of tapestry, lace, and embroidery. Specimens of silk are displayed in the gallery at the south, and of pottery in the gallery at the north corner of the

centre aisle, where the transept intersects it. Glass is placed in the gallery along the north side of the centre aisle, and the display of animal and vegetable raw produce is on the side gallery looking southwards. Specimens of food are also exhibited in this last-mentioned part of the building. Mining and metallic raw produce are disposed of on the ground-floor to the south. Hardware, the largest class of all, and with the greatest number of exhibitors, is arranged along one of the main passages running east and west on the south side of the centre aisle. The display of cotton and leather fronts the centre aisle on the north side. Furniture is arranged on both sides of it, and occupies a very considerable space. Woollen and mixed manufactures face the centre aisle on the south, the exhibitors having agreed to act in concert, and determined to fit up the space allotted to them in the very best style. The display of printing and dyeing and of linen is on the south side of the centre aisle.

The space occupied by machinery is in the form of a parallelogram of 240 feet, by 72 feet in breadth, situated on the north-west portion of the building. Here arrangements are made for displaying in motion almost every variety of machine, from the first stage of the preparation of the cotton up to its final manufacture in the loom, including "laps," "racks," "single scutchers," "cotton-bings," "finishers," "stubbers," "drawers," "grinders," "roving-machines," "throstles," "mules," "doublers," "machines," "warpers," "winders," "fly-frames," and "looms," with a variety of other machinery. With respect to the details of the arrangements made by the Commissioners, machines requiring to be driven by steam, will be supplied with steam at a pressure not exceeding 30 lbs. to the square inch, free of charge to the exhibitors, and it will be conveyed in clothed pipes to those parts of the building where the machines are situated, and many parties sending such machines have sent with them a small portable steam-engine, to which a steam-pipe is laid on. In cases where the machines are too small to require an independent portable engine, they are placed in groups,

in connection with some steam-engine sent by other parties for exhibition.

Many industrial operations will thus be exemplified during the Exhibition, and impart an immense amount of instruction and information to thousands, who otherwise would perhaps never have had their attention directed to such operations. With our notions of this mighty show of the real business of life, the collection of machinery excites far deeper interest than anything else exhibited. We admire the genius evinced in the works of art, we look with wonder on the curious productions of skill, we delight in the costly and brilliant things, which supply the wants of the rich and great, but we see in the machine that which, by cheapening, gives countless comforts and enjoyments to the masses, who otherwise would themselves have remained mere machines, with little development of the faculties of our common nature. It is an interesting fact in connection with machinery, that its invention and experimental construction have oftener than anything else brought the educated and the uneducated, the high and the low, into an intimate communication, in which mutual respect has many and many a time grown into a sincere and honourable friendship, advantageous to all parties; while it is frequently to the workman that we owe important improvements and inventions themselves. Besides, it is to machinery we are now indebted for this magnificent exhibition, and its stupendous edifice itself. Without the large application of machinery, the Crystal Palace could not have been produced, and without the application of machinery to manufactures, there would have been little worth exhibiting from any part of the world.

Throughout the distribution, the reader will not fail to trace the observance of that general principle of arrangement, which the Executive Committee at the outset laid down for their guidance, and which, while it removed machinery to the north, and raw produce to the south side of the building, reserves for the centre the brilliant colours, the diversified forms, and dazzling effects of the gayer manufactures. It is with great pleasure we notice

the fact, that in some of the principal departments of industry many of the great producing towns of our own country and of foreign countries have acted cordially together, and taken steps to secure a combined action, by which those portions of the Exhibition might, as a whole, be placed in the most advantageous light. Manchester and Birmingham especially, as becomes them, have shown a proper spirit of friendly and active co-operation with the Executive Committee. But in dealing with most of the great towns and principal exhibitors, foreign and domestic, the Executive Committee have had no very serious obstacles thrown in their way. It is where they have had small contributors to manage that they have had most to contend with. Their object has naturally been so to distribute the space, that each local division of a class shall be made, as far as possible, consistent with the architectural character of the building. They have therefore sought to collect the homogeneous products of different districts as much as they could into the form of courts, and to prevent their running into long narrow strips, destructive of convenient arrangement, perplexing to the visitor, and at variance with the general design of the interior, in which they have certainly been extremely successful; producing the charming effect of so many quadrangular allotments, each filled up with industrial products of a kind, and affording endless opportunities for contrast and comparison. The Austrians have furnished a suite of four rooms with some splendid furniture, which we shall particularly notice in another place. A cotton-spinner, from Lancashire, has displayed the whole process of the cotton manufacture in another; and a similar space has been given to fit up a mediæval court, or chamber, in which one side is hung with church furniture, the three remaining sides with domestic furniture of the same era, and in the middle there will be a mixture of flowerpots, fonts, armchairs, tables, &c., which will remove the impression of a strictly ecclesiastical character in a secular exhibition. There is also a well-proportioned room for sculpture, 70 feet long.

Many persons imagine that an exhibition of this kind

will contain only such articles as are really curious or intrinsically valuable; that is a great mistake. Every such collection must necessarily contain, as this certainly does, much of a very frivolous character, and of very mediocre excellence. Those whose travelled eye, superior knowledge, and more cultivated taste will turn away from such contributions, must recollect that all who exhibit, and all who go to see the Exhibition, have not had quite their advantages, and that while the Commissioners have done all they can to gather up what is excellent, it was imperative upon them not to be too repressive in their admission of articles, or it could hardly have been a world wide display. However, the frivolous and the mediocre occupy no large space, while the important and the truly ingenious, the skilful, the beautiful, the valuable, and above all, the useful, challenge the admiration of the visitor at every step, as he travels for miles through the wonderful collection.

The principles which have guided the Commissioners in the appropriation of space, both for the products of British industry and for that of other countries, have at once been liberal and prudent. With reference to our own people, they have been influenced, to a certain extent, by the demand for allotments, pruning down this demand in the divisions where it was most exuberant, and encouraging it in those where it was most feebly displayed. As might have been expected in a practical nation like ours, little difficulty was experienced in finding a very large proportion of exhibitors in the departments of machinery and manufactures. These engrossing and paramount branches of our own industry would almost of themselves have flooded the Crystal Palace with their products; and it was absolutely necessary, in order to secure a choice selection of articles, to limit the space available for them. In the divisions of raw produce and the fine arts there has been less competition, and to these, as struggling branches of our national industry, the Commission have been more indulgent. Great difficulties have been found, both in confining machinery and manufactures within manageable bounds, and in raising the

display of fine arts and raw produce to a scale commensurate with their importance. In the fine arts department a scarcity of contributions at first existed, the principal exhibitors coming forward at the last hour. After all the exhibiting surface of the Crystal Palace had been exhausted, ample space remained for ornamental purposes; and in a point where, as a people, we are so deficient, the facilities afforded for giving an impetus to the fine arts in connection with manufactures have been a little neglected. In the appropriation of allotments to foreign countries, the Commissioners have been mainly guided by the extent of their commercial transactions with ourselves. Of course there are nations, such as Holland, with whom our intercourse, though great, being principally dependent upon the extent of their mercantile marine, affords little scope for illustration at the Exhibition; but, upon the whole, the areas allotted to different states that have volunteered contributions tally pretty closely in relation to each other with what might have been predicted from the returns of their trade with us. One-half of the new building having been set apart for their use, it was of course necessary to intimate to each the space at its disposal, and in most cases the space so allotted fell short of what was desired. Some countries wavered considerably about entering into the general competition invited, and the South American Republics are almost unrepresented; but the great European communities have entered warmly into the great design, showing most conclusively, that nations, like individuals, respond to challenges for generous action even more readily than to those for the slaughter and robbery which have so long disgraced civilized communities. From France, Germany, Russia, and our cousins across the Atlantic, the display of industrial products is fully equal to the occasion, as they are in fact from the Zollverein, Belgium, Switzerland, Holland, Sweden, Denmark, Sardinia, Tunis, Turkey, the East Indies, and our colonies in the east, west, south, and north, especially where emigration from home has taken root. Indeed, there are few spots on the globe known to commerce which are not in some

degree represented in the gigantic display of human industry.

As it was most important to keep this grand industrial exhibition as much as possible from descending in any way into the character of a bazaar, the Commissioners at first made a rule to prevent the affixing of prices to any articles; but as a great number of the most useful fabrics are exhibited for the economy of their production, it was found necessary to relax this regulation. We are glad it has been so relaxed; for to the great majority of the visitors, economy of production will no doubt be the chief point of interest, while to the purposes of commerce, the advance of civilization, and the great objects of this Industrial Exhibition, it is of paramount importance. These exhibitions began, as we have already noticed, by the collection and display of the productions of the fine arts for the gratification and patronage of the rich, but their natural and beneficent tendency in another direction soon manifested itself by the rapid increase of such things as were calculated to supply the wants and improve the condition of the masses. In fact, these exhibitions, in a high degree, manifest the great law of progress, that the world is not made for a chosen few, but for the happiness and enjoyment of the whole human family. We therefore consider the manufacturer who produces some fabric of everyday and universal utility, at a reduced cost, as a great benefactor, worthy of the highest commendation, and deserving perhaps of a higher class medal than one who displays a finer or more elegant production. And it is with no little pride that we reflect upon what the English manufacturer has done in this way immeasurably beyond the manufacturer of any other country, for the amelioration of the commercial world. All the more important articles of daily necessity—cottons of every description, woollens of all kinds, cutlery and tools, books and engravings—have been produced cheaper and cheaper by them, till the very humblest and poorest begin to partake of enjoyments once only known to the richer classes of society.

Following all the passages, passing along all the gal-

leries, so as to see everything or most things exhibited, will require the visitor to travel between twenty and thirty miles, and as the greater part of his time must necessarily be occupied standing still, in examination of what he sees, and his change of place be by a very slow progress, it is evident that many visits will be requisite in order to see this exhibition, even though such visit be a long one. As to examining everything critically, that will be wholly out of the question. Every visitor will have to make a marked distinction, not only between the frivolous and important, the mediocre and the excellent, but between what has little and what has great interest in his own eyes. We hear of persons "running up to London for a day, to see the Exhibition." If one can only spare a day for the purpose, it will certainly be a day well spent, and that ought to be spent by all who can afford it; but a very small portion of that which is worth a long journey to behold can be seen under a number of days most industriously devoted to the purpose.

All, however, should devote as much time for the inspection and study of the wondrous collection, as their circumstances will permit. Intelligent persons may reap immense improvement while they are seeking the gratification of their curiosity, gaining an increase of knowledge, improvement of taste, enlargement of views, and more liberal feelings towards the great family of man. Many of the advantages of extensive travelling here offer themselves, for a vast deal of all that is worth seeing in most parts of the civilized world is here spread out for examination and ready comparison, highly illustrative of the science, arts, character, manners, customs, and habits of different nations. The young especially would reap incalculable advantage from repeated visits, particularly if properly directed by their friends while viewing the Exhibition, and afterwards are led to read respecting the various countries whose names and productions would be so agreeably imprinted in their memories. But it is the working class, to whom more than to any other we owe this mighty show, who may derive the greatest improvement from it, and who ought to stretch a point

to take all the advantage they can of so rare an opportunity.

The Commissioners have anxiously considered all classes of visitors, and we are sure they have endeavoured to make such arrangements as would most effectually secure the convenience of all classes of the public visiting the Exhibition, whether for study and instruction, or for the more general purposes of curiosity and amusement. While they looked to the security of the enormous amount of property deposited in the building, to the effective control over the number of visitors admitted at any one time, and to the self-supporting character of the Exhibition, they have endeavoured to render it accessible to all persons at the lowest possible charge which would enable them to effect these purposes. Some persons, and Mr. Paxton at their head, influenced beyond doubt by the most generous and high-minded views, proposed that admission should be gratuitous. Had it been so determined, we should have had no fears whatever for the conduct of any who entered the building, but it would have changed, and, in our opinion, altogether lowered the character of the Exhibition, degrading it from the high and honourable position of being a self-supporting institution, to that of dependence upon a government grant, which would have been alike unjust and contrary to British habits of public action.

The charges for admission are, for season tickets, for a gentleman, £3. 3*s*., and for a lady, £2. 2*s*., not transferable, but entitling the owner to admission on all occasions on which the Exhibition is open to the public. On the first day of exhibition season tickets only will be available, and no money will be received at the doors of entrance on that day. On the second and third days, the price of admission on entrance will be, each day, £1; on the fourth day of exhibition, 5*s*., to be reduced on the twenty-second day to 1*s*. From the twenty-second day the prices of admission will be as follows:—on Mondays, Tuesdays, Wednesdays, and Thursdays, in each week, 1*s*., on Fridays, 2*s*. 6*d*., on Saturdays, 5*s*. No change will be given at the door. This regulation is

necessary to prevent the inconvenience and confusion which would arise from interruption or delay at the entrances. Should experience in the progress of the Exhibition render any alteration in these arrangements necessary, the Commissioners reserve to themselves the power of making such modification as may appear desirable, of which due and timely notice, however, will be given to the public. No free admissions, whatever, will be granted; and the first persons who bought season tickets, were Prince Albert, the Executive Committee, and many of the Commissioners themselves.

From the enormous space within the Crystal Palace, and the excellent arrangements made for conducting the Exhibition, there can hardly be any great crowding of visitors; while the outlets are so numerous and well placed, that any one can leave the building at any moment without difficulty. This is a point of very great importance, and will enable many persons of delicate health and peculiar temperament to visit the Exhibition without anxiety. Besides, the ventilation is so perfect, that none of the ordinary inconveniences of an exhausted, overheated, and polluted atmosphere can possibly exist. The space is so vast, that there will be very little difference, in its freshness and purity, between the atmosphere within and without the building.

The refreshment-courts are so placed as to admit of ready access; and every care has been taken to make them conduce to the convenience and wants of the visitors. The principal refreshment-court in the transept has its entrance through a space of 24 feet. Upon either side of the entrance, a low railing, extending 24 feet, placed at a distance of 48 feet from the intersection of the nave and transept, separates the refreshment-space from the other part of the building. The serving-spaces and counters are placed upon either side, having each a frontage of 96 feet. The open space between the counters is 96 feet in width, and 72 feet in depth, extending to within 48 feet of the extreme north side of the building; the intervening space being occupied by "lobbies," waiting-rooms, &c. A twenty-four feet square, at the

extremity of the serving-spaces, is occupied by store-rooms. The space occupied by this court, including all the passages, &c., is about 18,000 square feet. The eastern refreshment-court, situated in the front of a space, gravelled and turfed, 120 feet in length by 48 feet in breadth, partly occupied by a number of small trees, and two spaces of 48 feet square. The total length of counters and bars in this court is nearly 350 feet, the width of the counters being from four to six feet: 1,052 square feet are set apart for lobbies and waiting-rooms. The total area of this court, including passages, &c., is near 20,000 square feet. The area devoted to the western refreshment-court, including passages and space for "lobbies and waiting-rooms," is 12,096 square feet, the length of counter and bar being 136 feet. Glasses of filtered water will be supplied gratis to visitors, and a quantity of bread, cheese, and butter always kept for sale, at prices to be agreed upon between the contracting parties; and it has also been arranged that none of the other refreshments supplied shall be charged at a higher rate than that of any respectable London establishment; those rates being fixed by the Commissioners, so that under no circumstances is there any danger of extortion being practised upon visitors. Most properly, wines, beer, and spirituous liquors are strictly prohibited, in order to prevent the possibility of any annoyance from that most common species of insanity which people labour under when they are said to be "a little fresh." To insure order in every way, a considerable body of the police-force will be stationed in and about the building, who, from their admirable drilling, and most civil and obliging deportment, will, in many ways, be highly serviceable to visitors, especially foreigners.

Among the many arrangements which have devolved upon the Commissioners, they have not neglected to take the greatest precautions to prevent any accident from fire in the building. The mains are always kept charged with water, and a number of the men of the fire brigade are present during day and night. Twenty engines, the property of the Board of Ordnance, a large number of

leather buckets, and a quantity of hose, have been placed at the disposal of the Commissioners, and are kept ready for immediate use, should they be required, to extinguish any fire that might occur.

Great difficulties have existed in consequence of our absurd and mischievous Patent Laws, which must appear to a stranger as expressly intended to repress that very advance which the Exhibition is chiefly intended to stimulate and promote. The Commissioners applied to Parliament last year for a special Act to secure to all manufactures and inventions received for exhibition a provisional and gratuitous registration, which should secure them, sacred and intact, to their respective owners; this protection to extend for one year, dated from the opening of the Exhibition: at the end of which probation the inventors or owners would be at liberty to avail themselves of the ordinary protection of the Patent Laws, which we trust by that time will be most materially and amply revised. But unfortunately this special measure, the Designs Act of 1850, intended by its promoters to meet a peculiar and necessary exigency, has, through the singular omission of the very words which alone could secure its object, and on which, indeed, depended the very spirit of its enactment, been rendered utterly abortive as regards any manufacture or invention for which Letters Patent are being granted. The Commissioners have, however, taken necessary steps to provide for this difficulty and to make the security of all exhibitors of designs and inventions complete.

The most delicate and important matter in the arrangements which the Commissioners had to make, was the constitution of juries for adjudging prizes. The French Expositions had, however, afforded much experience upon the subject, from which our Commissioners have largely profited. Professor Playfair, to whom the task was confided, has produced a most elaborate and scientific classification of the objects in the Exhibition, as the basis of the arrangements for juries. The Exhibition is divided into four classes, and these again into thirty sections, with a jury to each section. Raw materials are in four sections,

three of which have eight jurors, and one six jurors; machinery is in six sections, three of which have twelve, and three eight jurors; manufactures are in nineteen sections, five of which have twelve, seven have ten, four have eight, and three have six jurors; and fine arts are in one section, having twelve jurors; making an aggregate of 270 jurors. To facilitate the labours of the juries, the articles in the Exhibition are arranged as much as possible in coincidence with the thirty sections, and a classified list of objects under the province of each jury is furnished to it. No juror can be a competitor in himself or through his firm for a prize in the section for which he acts, and no award can be made, except by a majority of the whole jury, nor published till it has been submitted to a council composed of the chairmen of all the sections, whose sanction is final. The juries will commence their duties on Monday, the 12th May, at 10 o'clock, and will be aided in the general transaction of the business by a person to be named by the Royal Commissioners, who by himself, or by a deputy to be approved of by the Commission, may be present at their deliberations, for the purpose of explaining the rules of the Commission. This nominee of the Commission will not have a vote in any of the juries, or at all interfere in the adjudication of awards.

The jury will generally consist of an equal number of British subjects and of foreigners. Each jury will be presided over by a chairman, to be nominated by the Commissioners, and he will be aided by a deputy-chairman, to be elected by the jury, who may appoint one of their own body as a reporter. At the sittings of the Council of Chairmen the deputy-chairman will take his seat in the absence of the chairman of his section.

The Council of Chairmen will be constituted, as far as practicable, equally of British subjects and foreigners.

The Council of Chairmen will frame the rules for the guidance of the juries, and will also determine the conditions under which the 1st, 2nd, and 3rd class medals respectively are to be awarded, and to define the general principles to which it will be advisable to conform in the

awards in the several departments of the Exhibition. It is the wish of the Commission that medals should be awarded to articles possessing decided superiority, of whatever nature that superiority may be, and not with reference to mere individual competition.

Although the Commissioners may be disposed, under peculiar circumstances, to consider the propriety of pecuniary grants to individual exhibitors, they will only take such applications into consideration on the recommendations of the several juries, sanctioned by the Council of Chairmen.

As some of the most important duties of the Council of Chairmen are preliminary, they will therefore commence on Monday, the 5th of May. In order to represent the wishes of the Commission, and to explain its rules, a nominee of the Commission will attend the meetings of the Council, and aid it in the transaction of business, but he will not possess a vote or act as a member of the Council.

In constructing the British juries, those towns which exhibit to a considerable extent in any of the sections, have been invited to send a list of names of persons competent efficiently to represent the knowledge of those sections.

Those persons who have been recommended as jurors, but who, from the numbers of the jury, are not placed on it, may, on the application of a jury, be called in on special occasions, to give aid, under the title of associates, but without a vote.

The decisions regarding foreign jurors are delayed until the opinions of the agents of foreign commissions are obtained as to the proportions in which each nation should be represented in the respective classes, and as to the principles of nomination most agreeable to the countries which they represent.

The Council of Chairmen will meet on Monday the 5th May, and the juries, for the transaction of business, on Monday the 12th May. Although it is impossible to set apart special days in which the juries alone can examine the articles exhibited, to the exclusion of the public,

arrangements will be made to carry on these examinations with as little inconvenience as possible.

Many persons have been at a loss to know how agricultural implements were to be judged of. They have been placed under the management of a committee of gentlemen, appointed by the Royal Agricultural Society, and the field implements sent for practical trial in the country, to Pusey, where it was carefully performed, before competent and impartial judges.

The Commissioners state that after having had under their careful consideration the subject of the prizes to be awarded to exhibitors, they resolved to have medals struck, of various sizes and different designs, it being their opinion that this is the form in which it will, generally speaking, be most desirable that the rewards should be distributed. They have decided to select bronze for the material in which the medals are to be executed, considering that metal to be better calculated than any other for the development of superior skill and ingenuity in the medallic art, and at the same time the most likely to constitute a lasting memorial of the Exhibition.

The Commissioners offered three prizes of £100 each, and three of £50 each, for the best designs for these medals, and out of a large number of competitors, the three larger prizes were awarded to M. Bonnardel, of Paris, to Mr. L. C. Wyon, and to Mr. G. G. Adams, of London, and the three other prizes to Mr. J. Hancock, of London, M. Wiener, of Brussels, and M. Gayrard, of Paris. M. Bonnardel's medal represents Mercury holding a female figure by the hand, intended for Industry, with an anvil, locomotive-engine, &c., near her, in front of a figure of Britannia, standing on a slightly-raised platform, with both hands extended, holding wreaths: flags of different nations make up the background. Motto: "Est etiam in magno quædam respublica mundo." Mr. Wyon's medal represents Britannia, seated, placing with one hand a laurel wreath on the head of an emblematical figure of Industry; and leading her forth with the right hand. Behind, are representations of the four quarters of the world, who have brought industry to

Britannia. To the right are emblems of the four sections:—the cotton-plant and wheatsheaf, a wheel, a bale of goods, a vase. Motto: "Dissociata locis concordi pace ligavit." Mr. G. G. Adams's medal is a gracefully-modelled group, in low relief, of Fame, Industry, and Commerce. Motto: "Artificis tacitæ quod meruere manus."

In the department of Raw Materials and Produce, for instance, prizes will be awarded upon a consideration of the value and importance of the article, and the superior excellence of the particular specimens exhibited; and in the case of prepared materials, coming under this head of the Exhibition, the juries will take into account the novelty and importance of the prepared product, and the superior skill and ingenuity manifested in the process of preparation.

In the department of Machinery, the prizes will be given with reference to novelty in the invention, superiority in the execution, increased efficiency, or increased economy, in the use of the article exhibited. The importance, in a social or other point of view, of the purposes to which the article is to be applied, will also be taken into consideration, as will also the amount of the difficulties overcome in bringing the invention to perfection.

In the department of Manufactures, those articles will be rewarded which fulfil in the highest degree the conditions specified in the sectional list, viz.:—Increased usefulness, such as permanency in dyes, improved forms and arrangements in articles of utility, &c., superior quality, or superior skill in workmanship. New use of known materials. Use of new materials. New combinations of materials, as in metals and pottery. Beauty of design in form, or colour, or both, with reference to utility. Cheapness, relatively to excellence of production.

In the department of Sculpture, Models, and the Plastic Art, the rewards will have reference to the beauty and originality of the specimens exhibited, to improvements in the processes of production, to the application of art to manufactures, and, in the case of models, to the interest attaching to the subject they represent.

These general indications are sufficient to show that it is the wish of the Commissioners, as far as possible, to reward all articles, in any department of the Exhibition, which may appear to competent judges to possess any decided superiority, of whatever nature that superiority may be. It is the intention of the Commissioners to reward excellence in whatever form it is presented, and not to give inducements to the distinctions of a merely individual competition. Although the Commissioners have determined on having three medals of different sizes and designs, they do not propose to instruct the juries to award them as first, second, and third in degree for the same class of subjects. They do not wish to trammel the juries by any precise limitation; but they consider that the juries will rather view the three kinds of medals as a means of appreciating and distinguishing the respective characters of the subjects to be rewarded, and not of making distinctive marks in the same class of articles exhibited. They fully recognize that excellence in production is not only to be looked for in high-priced goods, in which much cost of labour and skill has been employed, but they encourage the exhibition of low-priced fabrics, when combining quality with lowness of price, or with novelty of production. They can readily conceive that juries will be justified in giving the same class medal to the cheapest calico print, made for the Brazilian or other South American market, as they would to the finest piece of *mousseline de soie* or *mousseline de laine*, if each possessed excellence of its own kind.

Lastly, the Commissioners in announcing their intention of giving medal prizes, do not propose altogether to exclude pecuniary grants, either as prizes for successful competition, or as awards under special circumstances, accompanying, and in addition to, the honorary distinction of the medal. There may be cases in which, on account of the condition of life of the successful competitor (as, for instance, in the case of workmen), the grant of a sum of money may be the most appropriate reward of superior excellence; and there may be other cases of a special and exceptional nature, in which, from

a consideration of the expense incurred in the preparation or transmission of a particular article entitled to a prize, combined with a due regard to the condition and pecuniary circumstances of the party exhibiting, a special grant may with propriety be added to the honorary distinction. The Commissioners are not prepared, for the present at least, to establish any regulations on these heads. They consider it probable that a wide discretion must be left to the juries to be hereafter appointed in respect to the award of money prizes, or the grant of money in aid of honorary distinctions; it being understood that such discretion is to be exercised under the superintendence and control of the Commission.

Like Falstaff, who was not only witty himself, but the cause of wit in others, the great Exhibition not only awards prizes, but has caused many others to be offered for competition in various ways connected with the Exhibition. That most excellent institution to which we owe the Exhibition itself—the Society of Arts—is offering prizes for philosophical treatises on the various departments of the great Exhibition, setting forth the peculiar advantages to be derived from each by the arts, manufactures, and commerce of the country. The successful treatises are to be the property of the society; and, should the council see fit, they will cause the same to be printed and published, awarding to the author the net amount of any profit which may arise from the publication, after the payment of the expenses. They accordingly offer, in the name of the society, the large medal and £25 for the best, and the society's small medal and £10 for the second best treatise on the objects exhibited in the section of raw materials and produce. A large medal and £25 for the best, and a small medal and £10 for the second best, treatise on the objects exhibited in the section of machinery. A large medal and £25 for the best, and a small medal and £10 for the second best, treatise on the objects exhibited in the section of manufactures. A large medal and £25 for the best, and a small medal and £10 for the second best, treatise on the objects exhibited in the section of fine arts. Each

treatise must occupy, as nearly as possible, eighty pages of the size of "The Bridgewater Treatises." The society will also award its large medal and twenty-five guineas for the best general treatise upon the Exhibition, treated commercially, politically, and statistically; and small medals for the best treatises on any special object or class of objects exhibited. The treatises to be delivered on or before the 30th of June.

At an extraordinary special court, the Goldsmiths' Company unanimously voted £1,000 to be awarded in prizes to British workers and artists of their craft, for articles in gold and silver plate of the richest design and best general merit. To prizes of this sort there can be no objection, even by the most captious. They are merely special prizes for special skill, and it is open to all the guilds of goldsmiths in the world to give the like impulse to their several craftsmen. The court also determined not to depend solely upon the judgment of the trade as to excellence, but to call in to the assistance of the goldsmith judges, noblemen and gentlemen distinguished for their taste in art and art-manufactures. The prizes will be from £300 down to £10. The works, candelabra, church-plate, and a long list of articles, great and small, down even to a salt, that all workmen, great and small, may have occasion for their skill. The several articles are to be sent to Goldsmiths' Hall, without the maker's name, and the best will, besides the prizes, be marked, as selected by the company for the Exhibition. It is said that many of the most eminent of the gold and silversmiths are working silently, but ardently, to produce the most costly and beautiful works, such as will indeed gratify the sight of the lovers of exquisitely-wrought work in the precious metals. Some will exhibit the richest centre-pieces, candelabra, vases, goblets, &c.; and we know of many of the great jewellers who are vieing with each other to produce the most beautiful specimens from their "ateliers." One Goliath of the trade will exhibit £100,000 worth of jewellery and precious stones. Some of the silversmiths have bethought themselves, too, of supporting their own renown, and at the same time

gratifying the world, by exhibiting each, if they obtain permission of their owners, some one or two works on which he has rested his fame—works which have been objects of presentation to distinguished persons.

The *Art-Journal* has offered a prize for the best essay on the Exhibition of 1851.

A clergyman of the Church of England, with the approbation of his Royal Highness Prince Albert, proposes, in an anonymous letter to the *Morning Chronicle*, "to give a prize or prizes of one hundred guineas for the best essay or essays on the following subject:"—"In what manner the union of all nations, at the Grand Exhibition in 1851, may be made the most conducive to the glory of God in promoting the moral welfare of mankind." He is "anxious, previously to the final arrangements, to avail himself of the opinions of the leaders of the public mind," and would be extremely obliged by any suggestions from the editor or the correspondents of the journal, to enable him to present the proposition before the public in a form most calculated to accomplish the object he has in view.

We must also mention what may be called an *à priori* prize of no trifling character. The Right Hon. Lady Rolle and Sir John Yarde Buller, Bart., have each presented Mrs. Clark with 200 guineas, to enable that eminent manufacturer to produce the finest specimen of Honiton lace.

Two medals, after the design by Mr. Adams, who received a premium of £100 as a successful competitor for one of the designs of the prize medals for the Great Exhibition, have been executed in gold, as prizes. The figures show Commerce stimulating Industry; the fleece and loom represent the raw material and manufacture of cloth; the pallet, colour, and the lion, Great Britain. The design is exceedingly chaste and beautiful; there is no crowding of figures, and yet nothing is omitted that could give distinctiveness. It is seen at a glance that the medal is intended as a prize for British-manufactured woollen cloth, with the especial view of extending the export trade. They were awarded as prizes by Messrs. Bull and

Wilson, of St. Martin's-lane, for the finest black cloth and black doeskin of English manufacture.

Mr. J. W. Gilbart offers a prize of £100 for the best essay in reply to the following question:—"In what way can any of the articles collected at the Industrial Exhibition of 1851 be rendered especially serviceable to the interests of 'practical banking?'" "These articles," it is explained, "may be architectural models that may suggest improvements in the bank-house or office; inventions by which light, heat, and ventilation may be secured, so as to promote the health and comfort of the bank clerks; discoveries in the fine arts, by which the interior of a bank may be decorated, or the bank furniture rendered more commodious; improvements in writing-paper, pens, ink, account-books, scales, letter-copying machines, or other instruments used in carrying on the business; improvements in printing and engraving, by which banks may get their notes, receipts, letters of credit, and other documents, of a better kind and at a less expense, or so as to prevent forgery; new inventions in the construction of locks, cash-boxes, and safes, which shall render property more secure against fire or thieves; and generally all articles of every kind which can be so applied as to improve, cheapen, or facilitate any of the practical operations of banking."

The Society of Arts is so completely identified with the Exhibition, that we shall mention here the praiseworthy arrangements made by it. The Council of the Society have determined to appropriate their rooms in John-street, Adelphi, to the hospitable duties which the international character of the Great Exhibition suggests. As a first step in that direction, they have elected all the representatives of foreign countries at the Exhibition honorary members of their body, and they have decided on the formation of reading and writing rooms for the use of our visitors from abroad. They consider that their offices will form a convenient and central spot to which the letters of foreign exhibitors may be directed, and they propose to hold weekly conversaziones, at which many of our visitors will probably attend. As the Exhibition is, to a certain extent, the offspring of the

Society, this attempt to fill up agreeably the gaps which the attractions of the World's Fair may still leave unsupplied cannot be too highly praised. By such aids as the performances of glee and madrigal clubs can supply, and by the collection of those specimens of British art in painting and other departments which are now in private hands, those who come to see our industrial wealth may also be enabled to appreciate the genius of our country upon points wherein the collection of products in Hyde-park will necessarily leave them uninformed. The Society, too, will have the satisfaction of contributing in a material degree to the comfort of those strangers whom we have invited to a peaceful rivalry, and who have come to us, we trust, in the same liberal and confiding temper as that which induced us to throw open to them our Exhibition. All this is worthy of that indefatigable Society, whose bold design, and still bolder battling with obstructions, have given us the Exhibition of 1851. One can readily imagine how numerous these obstructions would necessarily be in a project so gigantic. A few only of the countless and perpetually-recurring difficulties which the Commissioners have had to encounter have come before the public; such as the false fears for the safety of the building, which became broad-spread, and held back for a time many British as well as foreign contributors; our absurd Patent Laws; the crude but earnest objections to Mr. Owen Jones's decoration of the building; the allotments of space; the regulations for appointing jurors; the character of the medals; the prices and arrangements for admission; and the punctual opening of the Exhibition on the 1st of May. In our opinion they have solved all their difficulties in the most admirable manner, looking honestly and zealously to the generous purposes for which the Exhibition was instituted, and acting fearlessly, though most courteously and kindly, to everybody they had occasion to deal with; and if they have not satisfied all, the amount of positive complaint is wonderfully small.

EXTERNAL MOVEMENTS.

If any of the bold plans for navigating the air had been successful, and thus given us the means of passing as we liked over the world, a grand tour of inspection into the occupations of nations made during the last year, and especially for the last six months, would have revealed a curious and most gratifying spectacle. We should have witnessed, all over Europe, in North America, in part of South America, in the West India Islands, in the North and South of Africa, in the Scriptural East, in the East Indies, and even in a nook of China herself, in all our Australasian Colonies, and in many of the other islands of the Pacific, the human family, for the first time in history, preparing for one common, peaceful, enlightened, and beneficent transaction. In immense factories, in narrow workshops, in garrets and cellars, in studios, in drawing-rooms, and in cottages, under sheds, in mines deep in the bowels of the earth, in the open fields, on mountain sides, in wild plains, and in tangled forests,—the boundless semi-deserts of South Africa and the Himalayan chain,—along winding rivers, and on the bosom of the ocean, might have been seen numbers of men and women full of thoughts of the World's Industrial Exhibition, and busily engaged in devising, fashioning, or gathering up, their quota towards it, all desiring to witness it, and many preparing to do so. We should everywhere have found, not only how readily men entered into a sort of commercial competition and friendly rivalry of skill and ingenuity, but how promptly they took faith in the message of brotherhood, and how heartily proud they laboured, as they felt themselves participating in the really glorious work. Heretofore, war has governed the world, everything has been directed by brute force, all political institutions, and nearly all distinctions and classifications of society, were derived from war; nations were great in proportion as they were warlike; feeble, as the arts of destruction declined amongst them. Man really believed that the first and chief busi-

ness in this world was to destroy each other's property, to rob where they could, and to butcher one another. Even those whose better feelings and philanthropic views revolted at the hideousness of war, learned to consider it an inevitable curse on our species, as too many up to this hour do. But, thank God, a change is coming over the spirit of the civilized world. Commerce is now about to have her day. Slowly but surely has she toiled and struggled, during the first half of this century, in the contest for dominion with war, but of late years her strides have been those of a giant, and the time, we trust, is not so far off as is generally imagined, when the world will be ruled by her peaceful sway. It is only within the last ten years that in one or two countries the notion has been growing up into popular cognizance, that one people cannot injure another who trade with them without suffering from the recoil of that injury—that a nation cannot damage a customer nation without damaging its own trade; before long, all commonly intelligent men will clearly comprehend that the true glory as well as the true interests of all nations, is best promoted by peace and goodwill towards each other.

And this stupendous Industrial Exhibition has given already a great impetus and will still give a greater impetus to the progress of commercial dominion.

In almost every country of Europe, in the United States of America, in all our colonies scattered over the four quarters of the world, and in all parts of our own country, Local Committees have been formed, in which all classes have taken part, and have exerted themselves with the greatest zeal in collecting contributions and forwarding the views of the Royal Commissioners. In a great number of places, at home and abroad, Local Exhibitions have been organized and the best productions selected for the Great Exhibition; many of these preparatory Exhibitions have caused much excitement and drawn crowds to visit them, while most of the articles otherwise designed for the World's Exhibition have been offered to public inspection in the towns producing them, to the delight, improvement, and often to the surprise of those

who visited them, but who had not before known what handiwork industry was daily performing at their very doors.

France, the old hereditary enemy of this country, whose over-warlike propensities have been so greatly moderated by her National Industrial Expositions, instead of manifesting any want of faith in our fair intentions, or holding back in jealousy, though she entertained the idea, and then declined holding such an exhibition, has been the first to accept our invitation and enter zealously into friendly rivalry of skill. The Minister of Agriculture and Commerce has obtained from the National Assembly a grant to meet certain expenses of the French manufacturers and workmen in connection with the London Exhibition. The report of the Committee to whom the grant was referred is so interesting, coming as it does from a people who have had the greatest experience in Industrial Exhibitions, that we cannot forbear its insertion.

"We have ourselves endeavoured," say the Committee, "to collect additional information, having received communications both from the members of this Committee and the directors of the *Conservatoire des Arts et Métiers*, that admirable institution, which has rendered such great services to manufactures. It results from our investigations and deliberations, that all the advantages that may be derived from this Exhibition will not be obtained by merely furnishing the means of acquiring from it some specimens of products that our manufacturers require as patterns, either for internal consumption, or to compete advantageously in foreign markets. At the period of the exhibition of Berlin, one of the most distinguished manufacturers of France bought out of his own pocket 30,000 francs' worth of patterns, in the generous intention of promoting French manufactures. Is that which was at that time useful less so on this great occasion? The Chambers of Commerce, and our great manufactories, will doubtless themselves make some sacrifices for that purpose; but should not means be provided for aiding them, or supplying that which they do not feel bound to do?

It will also be assuredly necessary to commission a certain number of persons conversant in technical proceedings, to make short notes by which they may remember the machines and processes we may have occasion to copy, and of which we would furnish the details to our artisans and manufacturers, by adding to the riches of our collection at the *Conservatoire*. These notes would not in themselves occasion much expense, but the labour afterwards necessary on them would be not a little costly. In fine, we may be obliged to purchase some new and simple agricultural machines, whose price may not much exceed that of a drawing, but which may be considered useful. For these different objects we have thought a sum of 100,000 francs should be added to the credit, and placed at the disposal of the Minister of Commerce. This is seed which may produce valuable fruit. We have considered, in short, that it would consist with the general wish of the French manufacturers, to enable our skilful workmen and foremen to see the products in the competition of which their lives are passed. Throughout England subscriptions are set on foot with a similar view. In other manufacturing countries also similar arrangements are making. France would not certainly be left in the back-ground. The chambers of commerce, the consultative chambers of manufactures, even the towns, will seek doubtless the means of providing for this,—the great manufactories will do it directly. But to encourage this movement, to show the interest we all take in its development, we have considered that a credit should be placed at the disposal of the Minister of Commerce, a credit which must be used with great reserve, by not devoting it to those who can pay their own expenses, but by aiding the poorest, imposing on them in every case only a portion of the travelling expenses, which may be reduced by contracts made with the owners of public conveyances. The state could obtain contracts at reduced prices analogous to those of pleasure-trains, which increase every year, to the great advantage of the population. Some of these workmen and foremen may be selected from the superior workmen of the national

manufactories of Sèvres, the Gobelins, Beauvais, the School des Arts et Métiers, or the military or naval workshops. This is not an idle matter, and assuredly manufactures will reap the useful fruits of this concourse of intelligence, which will exhibit to each workman the perfection to which he should attempt to attain, and the means of arriving at it. It is announced that several English manufacturers intend to place in juxtaposition with their products the rudest implements successively abandoned. Every manufacturer may see if he be some steps in advance, or some points in arrear; and if the instruments and the raw produce be the same, he may observe what may be effected by the hand of the workman. We have considered that, for this kind of subvention, there should be allowed a credit of 50,000 francs."

Beyond doubt, many thousands of persons of various classes, and from all parts of France, will visit the Exhibition, and return home, we trust, with a new feeling of amity and regard for us. In anticipation that vast numbers will so visit us, the French railway companies are busily engaged in making arrangements for pleasure excursions during the Exhibition months, and steamboats are to run every day, or several times a day if needful, from Calais, Dunkirk, Boulogne, Dieppe, Granville, and Cherbourg.

From Belgium and Switzerland great numbers are preparing to visit the Exhibition, and the governments of these states have delegated special *employés*, who are to come at the public expense, in order to study the productions of other parts of the world. From Austria, the Zollverein, Denmark, and Sweden, Russia, Italy, and the other states bordering on the Mediterranean, official and private persons in great numbers are preparing to visit the Exhibition.

At Gottenburg, Vienna, Berlin, Madrid, and many other European towns, companies and clubs have been formed for the purpose of getting up visiting-trains to the London Exhibition, and great numbers promptly inscribed their names. In the United States, and our North American colonies, the most extensive ar-

rangements are made for visiting the Exhibition, in numbers far beyond anything that could have been anticipated. The New York Life Guards, one of the volunteers so common in the United States, are making arrangements to visit Liverpool, London, and Paris, in June next. They contemplate mustering 900 rank and file. A magnificent steamer is engaged to convey them to England and back.

From Turkey, Tunis, Greece, Algeria, and Egypt, from the East Indies, even China, from South Africa, and from our colonies in the Australasian region, visitors will flock to the Exhibition.

In our own country there is hardly a town of any note that has not formed companies and clubs for visiting the Exhibition. Our artisans have universally taken the liveliest interest in the Industrial Exhibition, and the newspapers have teemed with accounts of the formation of clubs by them, to the funds of which they have been for a considerable time contributing small weekly payments. In connection with these clubs, we have had frequent occasion to notice the encouragement, friendly aid, and sometimes the more substantial assistance afforded to them by employers of the men, and by other members of the richer classes. We give an account of the formation of a few of these clubs, as samples of the many hundreds of them which have been formed. At Edinburgh, the object of this association was stated to be the accumulation of funds, by weekly instalments or otherwise, to enable members to visit the Great Exhibition of 1851. Members might deposit any sum, not less than 6*d.* per payment, and upwards, at pleasure. Trustees: Bailie Dick, treasurer to the Local Board; Andrew Wemyss, Esq., city treasurer; and J. H. Stott, Esq. Interim Committee: James Bremner, silver-chaser; James Spink, lapidary; William Anderson, shoemaker; James Gilbert, glasscutter; P. C. Smith, sawyer; John Vallance, gilder; and George Lawson, engraver, secretary. The working classes of both sexes might join this society. At Beverley, a public meeting was convened in the Guildhall, to adopt measures for forming an association to enable the working

classes to visit the Great Exposition. The Mayor, as chairman, opened the proceedings. Alderman Sandwith, after some preliminary remarks, in which he eulogized the working classes for the zeal and spirit with which they had promoted the Great Exhibition of 1851, and the liberal manner in which they had contributed to its support, concluded by moving—"That in the opinion of this meeting, it is expedient to form a club or association for assisting the working classes and others in Beverley and the neighbourhood to visit the Great Exhibition of 1851." The resolution, seconded by a working man, was carried unanimously, as were also the following resolutions:—"That a committee be formed, whose duties it shall be to use their endeavours to secure for the members of the club the best and most economical arrangements, both as to railway travelling, board and lodging in London, and visiting the Exhibition and the numerous places of interest in the metropolis." "That the mayor be the president; that he, and Thomas Sandwith, Esq., M.D., Richard Hodgson, Esq., Thomas Cussons, Esq., H. E. Silvester, Esq., Mr. Charles James Fox, and Mr. Johnson Goulding, be the trustees, and that they together form the committee; that Messrs. Machell, Pease, and Liddell, be the bankers; and that Thomas Crust, Esq., be the treasurer and secretary of the club or association." At Sheffield, an association was established for the purpose of enabling its members to visit London on the most economical scale, by small weekly payments. President, his worship the Mayor; vice-president, the Master Cutler; trustees, Thomas Birks, T. R. Barker, and William Fisher, Esqrs.; treasurer, William Brown, Esq., Sheffield and Rotherham Bank; committee consists of the local and artisan committees; auditors, Thomas Oates and E. Hebblethwaite, Esqrs.; honorary secretary, Mr. Edward Birks. A weekly subscription of one shilling constitutes a member; and parties entering the society after the 1st of February pay a fee of sixpence, and after the 1st of March a fee of one shilling. The members of this society will be enabled to travel to London and back,

by railway, for about 12*s*. The association intend to adopt measures for procuring, as far as practicable, comfortable and economical accommodation for such of its members as require it during their stay in London. A public meeting of the working classes was held in the Music-hall to meet a deputation from the Leeds local committee. The deputation consisted of Mr. T. Wilson, Mr. R. S. Church, and Mr. T. Plint, when the appointment of a committee of five persons was proposed, to be appointed by the local committee, to communicate with the various railway companies; that an agency-office be opened in Leeds, to be continued during the time the Exhibition is open; that a committee, to consist of five members of the executive committee, be appointed to superintend it; and that they should appoint a treasurer and a paid secretary. Secondly, that each travelling club should communicate with this office through its chairman and secretary. Thirdly, that all negotiations with the railway companies and the clubs be carried on through the central agency-office. Fourthly, that the central office be open daily, within certain hours, for the purpose of inquiry, and the communication of information as to railway trains, lodgings, &c. The fifth suggestion was, that each club, on its first connection with the central agency-office, should pay down a certain sum for each fifty of its members, and a further sum not exceeding 3*d*. per head for each member who may take railway tickets, in order to defray the expenses of this office. At Liverpool the working classes have formed an excursion-club, for the purpose of enabling them, their wives and families, at a trifling cost, to visit the metropolis on the occasion of the Exhibition. The patrons—the Mayor, John Bent, Esq., the Venerable Archdeacon Brooks, the Rev. Rector Campbell; and the management is intrusted to the Liverpool Executive Committee for the Exhibition. Subscriptions of not less than one shilling weekly will be received at the Savings Bank, Bold-street, and at the offices of the District Provident Society. For the advantage of country members, subscriptions will be received daily at the District Provident Society's office,

Queen-square. The fare from Liverpool to London and back will not exceed 15*s.* 6*d.*; and it is the intention of the committee to endeavour to assist the working classes by affording them information respecting lodgings whilst in London; and they engage to furnish each member of the club with instructions for the journey, and during his stay in the metropolis.

The only thing in all that we have heard as to visiting arrangements, which strikes us as a great and deplorable deficiency, is the neglect of the young. We hear of the working men coming from all quarters, and something of their women, but nothing of their youths of both sexes. Now, these are the very persons above all others who would profit by a visit to the Exhibition, and through whose improvement society would reap the greatest benefit hereafter. We entreat every artisan who is blessed with an intelligent child above twelve years of age, boy or girl, to bring it, if he possibly can, to view, hand in hand with him, the wonders of the world's industry. He may be safely assured, that that child will feel as much pleasure, understand as quickly, attend to as many objects, recollect them as accurately, as he will, and that the impressions made upon it, and the knowledge gained, will fructify in the youth far more than in the adult with his stereotyped habits of thought and action. All great improvement in every way is to be made chiefly through the young, and they ought never to be neglected when good opportunities offer themselves for their cultivation.

Extensive arrangements have been made by the different Steam Navigation Companies and by the various Railway Companies, in this country and on the Continent, for accommodating visitors to the Exhibition. The directors of most of these companies have not only very much increased their means of conveyance, but generally met the propositions of visiting associations and clubs in a most liberal spirit. Similar arrangements have been made in the United States and in our American Colonies: one party of a hundred gentlemen at New York have engaged a sailing vessel to convey them to England and back,

to be fitted up so as to serve as a residence during their visit, in which they design to receive visits and to give parties.

The gathering will be the largest, the most diversified, and by far the most important that the world has ever known. The barbaric triumphs of old Rome and the Olympic games of ancient Greece were splendid gatherings of the times in which they occurred, and the accounts handed down of them have continued to excite interest and admiration ever since; but they sink into but minor events compared with the congress of nations at this first World's Industrial Exhibition.

The subject of lodging the visitors to the Exhibition has excited a good deal of public attention. Various propositions have been made for the organization of some comprehensive plan which would insure proper and comfortable accommodation to every class. This has been found impracticable. The Commissioners have stimulated private enterprise and taken steps to ascertain the extent of private arrangements in different parts of the metropolis, and have thus satisfied themselves that the most ample accommodation in the way of lodgings will be at the disposal of our visitors, especially of the working classes, both from our own provinces and from abroad. One of the results of private enterprise in this way, is the fitting-up of what has been called "The Mechanics' Home," near Cubitt's factory, on the river, which it is said will accommodate a thousand persons. In every part of London, many people are preparing to let lodgings in addition to the usual number who do so; and restaurants and *tables-d'hôte* will be found in considerable numbers for the particular accommodation of continental visitors.

The following regulations have been made by the Post-Master General as regards letters:—"Letters addressed 'Post-office, London,' or 'Poste Restante, London,' are delivered only at the window of the General Post-office, St. Martin's-le-Grand. The hours of delivery from the Post-office window, are from 10 a.m. to 4 p.m. When the person applying for letters is a foreigner, he must produce his passport. When a foreigner does not apply in person,

but by a messenger despatched for that purpose, the messenger must produce the passport of the person to whom the letters are addressed, as well as a written order signed and dated by such person. In the case of a messenger being sent for the letters of more persons than one, he must produce the passports and orders from each person. If the applicant for the letters is a subject of the United Kingdom, he must be able to state from what place or district he expects letters before he can receive them. Subjects of states not issuing passports are treated as subjects of the United Kingdom. If letters are directed to individuals simply addressed 'London' (and not 'Post-office,' or 'Poste Restante, London'), they will not be delivered from the window at all, but will be sent out by letter-carrier for delivery at the address furnished by the applicant. Foreign letters addressed 'Post-office,' or 'Poste Restante, London,' are retained for two months at the Post-office window. Inland letters similarly addressed are retained one month at the window; after the expiration of these periods, both classes of letters are respectively sent to the dead-letter office, to be disposed of in the usual manner. All persons applying for letters at the Post-office window must be prepared to give the necessary explanations to the clerk at the window, in order to prevent mistakes, and to insure the delivery of the letters to the persons to whom they properly belong. It will much facilitate the business of the Post-office, if the words '*to be called for*' are added to the address of letters which are directed 'Post-office, London.'"

CONTENTS OF THE CRYSTAL PALACE.

BRITISH CONTRIBUTIONS.

In giving a notice of the principal articles in the Exhibition, we shall begin with the British contributions, in which it is natural we should take the greater interest. In the display of cotton fabrics every useful requisite of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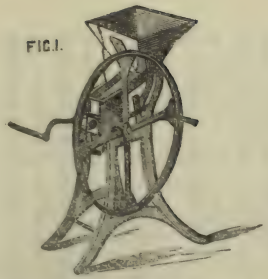

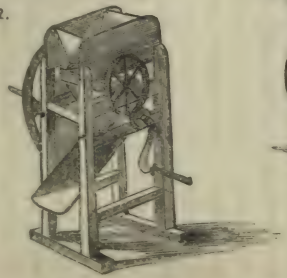

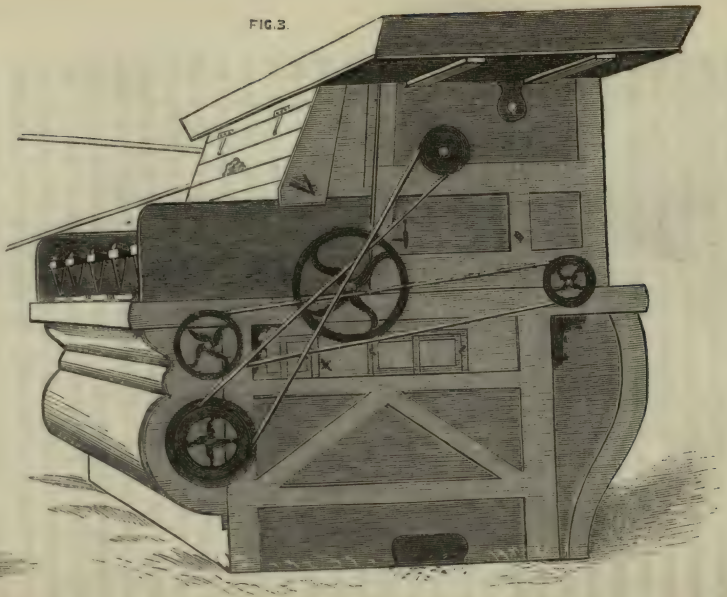

Fig. 1.—MACHINE FOR CRUSHING OATS OR GRINDING BARLEY.

Fig. 2.—RAPE AND LINSEED-CAKE CRUSHER.

Fig. 3.—THRESHING MACHINE AND STRAW-SHAKER. *Side Elevation.*

the trade is illustrated, and Manchester, Bolton, Glasgow, and Carlisle prove the leading exhibiting towns. The wholesale houses of the metropolis contribute the higher products of the loom, and the great firms of the north show the more preliminary processes. Printed fabrics are represented by the best houses in the print-trade, especially in Manchester, Glasgow, and London, and this department contains many novelties in the modes of production. Ireland principally furnishes linens and damasks; but Dunfermline, Leeds, and the wholesale houses of London are also exhibitors. In woollen and mixed fabrics the display is very effective. The poplins of Dublin and Norwich, the tweed stuffs of Scotland, the frieze of Ireland, carpets and shawls, the industrial products of the West Riding, Paisley, and other places, are all duly represented. In woollen cloths the West of England takes the lead, while the coarser fabrics include tartans from Galashiels and the Highlands, blankets from Witney and Rochdale, and horsecloths and railway-rugs from Chipping Norton and Kendal. The Exhibition, as far as the silk trade is concerned, has laboured under some disadvantages, especially those arising from the presumed superiority of French manufacturers in this department. The display, however, is more satisfactory than could have been anticipated. In leather, skins, and furs, the exhibitors are numerous, although the space occupied is not great. The shoemakers muster in great force. In glass and pottery our principal native manufacturers have come forward worthily to support the industry and skill of the country. Mineral manufactures, including bricks, tiles, and other substances, are not overlooked in the general display. Hardware, the most extensive of all the manufacturing classes, is represented by the leading houses in Birmingham and Sheffield, and amply vindicate the reputation we enjoy in the products of the forge and the anvil. The display of goldsmiths' work and jewellery is very considerable, and in certain kinds of large and costly work, such as racing plate, excellent; but, in the more cunning and artistic products of this class, our neighbours across the Channel will, it is believed, greatly

surpass us. In hosiery, Nottingham and Leicester put forth all their strength.

Aberdeen furnishes, amongst a great variety of articles, some beautiful specimens of Scotch topaz, cut as gems for jewellery; a most ingenious apparatus for measuring the human figure, and another for transferring the measurement to cloth, so as to procure a garment which will exactly fit any figure; a most important improvement—a cheap, simple, and durable Turkey-red dye; and a number of interesting models of farms, gardens, &c.

A most curious memento of the late Sir Robert Peel is exhibited, which has all been cut out of paper with scissors, by a factory operative, of Ashton-under-Lyne. The tomb contains 3,500 divisions, scrolls, and ornaments; one entrance-gate, 1,550 ditto; the other gate, 1,500; and the trees consist of 25,000 sprigs, branches, and boughs. The total contains 61,550 divisions, scrolls, and ornaments.

Airdrie furnishes specimens of the results of all the various processes of iron-making; exhibiting the iron-stone in its natural state, and showing the various stages it passes through in its transition to pig-iron, refined iron, cast iron, malleable iron—tracing it in fact from the rude state in which it comes from the bowels of the earth, through all its various forms, till it finally comes forth in the shape in which it is prepared for sale.

Bakewell has furnished a side-table for Prince Albert, composed of Derbyshire black marble, inlaid with foreign and British stones. The design was furnished by his Royal Highness; it consists of bouquets of evergreens, in which the national emblems are conspicuous, forming a deep border outside a square of yellow foreign marble. The whole supports a shield on which is the initial V.

Bath exhibits a lilliputian steam-engine, the work of Mr. Burke, an artisan; this is a double vibrating engine, yet so small that after being wrapped up in paper, it can be placed very comfortably in an ordinary-sized walnut-shell. The plate on which this minute piece of workmanship stands is about the size of a sixpence.

And a circular loo-table, made by Mr. Imprie, 4 feet 3 inches in diameter, with stand and claws, formed out of the root of a larch tree. The slab is composed of four pieces only, all of the same section of the wood, so that the veins correspond and connect together so naturally that the whole looks as of one entire surface.

Mr. Alex. Walker, gardener at Mayen, Banffshire, exhibits a most remarkable instrument of the kind of Mr. Babbage's celebrated calculating machine, intended for measuring heights and distances, land-surveying, levelling, &c. It is said to solve problems in trigonometrical and triangular measurement in a short space of time, and with so little calculation to the operator as entirely to supersede the use of the theodolite, circumferenter, plane-table, and various other instruments hitherto in use—the grand principle being, that it is a "self-calculator," requiring scarcely the aid of pen or pencil from the operator. In right-angled triangles, one side and one acute angle, being given, it calculates the length of the other two sides. By this machine a field may be measured, and the plan of the same laid down from the centre, or any convenient place, either within the boundaries of the field, or from a distance without the limits of the ground, provided a view of the margin of the same, or even the angles or corners, be within sight of the surveyor. This can be done in a shorter space of time and with far less labour than by any other method. Another purpose to which it can be readily applied is laying off the lines of roads or railways, canals, watercourses, &c., because at one glance it will point out the rise or fall per foot, yard, or mile between two given points, and at the same time inform the surveyor the distance between the said points; so that in a few minutes he has information of the whole rise or fall, on a given distance of a line of railway, &c. It can also show the depth of cut required on any eminence or hill that may be in the route. The principal part of the machine may be made a "pocket companion," and the remainder a "walking-stick." And we understand a person may be taught to work the instrument in all its operations by a glance at a directory which

Mr. Walker has written for it, or at most by an hour's practice.

Among the numerous articles from Barnsley, is a most interesting model, exhibiting all the underground operations of a colliery in full work.

As a specimen of skill in weaving, and also of human ingenuity and patience, a weaver of Bradford has contributed to the world's fair a woven New Testament.

Mr. Appleyard, of Balbriggan, has brought cotton to rival in texture and softness the finest silk. A dozen pair of ladies' stockings, of full size, weigh only nine ounces.

A magnificent medal has been produced by Messrs. Allen and Moore, of Birmingham, intended to celebrate the occurrence of the Industrial Exhibition. On the upper part of one side there is a spirited representation of the Exhibition building. The foreground is in high relief, the portion of the structure nearest the eye also firmly marked, giving great effect to the perspective, and conveying the idea of distance and immensity. The highly relieved foreground cuts off the *matériel* of the design from an allegorical group, in which Britannia is seated, awarding honours to the representatives of the four quarters of the globe; and the still life, representing Agriculture, Trade, and Commerce, gives richness and completeness to the composition. The other side is occupied by a likeness in profile of his Royal Highness Prince Albert, exquisitely modelled, with rich border, composed of the style and title of the Prince. The medal is very large, upwards of four inches in diameter, and half an inch in thickness.

Messrs. Sandford, Owen, and Co., have furnished an improved screw-cutting lathe, so simplified in construction, as to do its work with great precision, and to be subject to the control of a mere child. Mechanicians and others conversant with machinery will recognize its distinguishing characteristics in the following description. The improvement consists in working the saddle, and in throwing out the back gear of the fast head-stock. The saddle is worked thus:—The nut is solid, with a spur-

wheel cast upon it, working into another spur-wheel on a back shaft, on which there is a bevelled pinion working into a bevelled wheel, and keyed on an upright shaft working through the saddle. There is another bevelled wheel, keyed upon the top of that shaft, working into a bevelled pinion upon the handle-shaft, which moves the saddle backward and forward at pleasure. In addition, there is an index disc upon the handle-shaft, which divides the screws into as many threads as are required, without interfering with the change wheels. The bevelled wheels on the saddle communicate motion to the screw in the saddle, which self-acts transversely. The improvements in the fast head-stock consist in a worm and wheel for throwing out the back gear. It is cheaper in construction than the ordinary mechanism of this kind, because it does everything with a screw, at a much less original cost. Great economy of labour will be effected in cutting screws in a variety of instances. The machine admits of being worked by a wholly unskilled hand, whereas the ordinary screw-cutting apparatus, being more complicated, requires to be worked by a man of some ability. This improved machine likewise answers some of the uses of a planing-machine, besides being applicable as an ordinary lathe.

There is a most interesting collection in plate and stained glass, consisting of specimens illustrating the manufacture of plate glass in all its processes; a glass dome, in one piece, containing fifty feet; glass tables, in jasper, opal, and marble glass; eight windows of very beautiful stained glass; and six windows of painted glass, one of which contains ninety square feet.

Birmingham also sends a press as ingenious as it is useful for cutting leather, linen, paper, and other materials. It consists of a "fly press." To the bolt of this press is affixed, by screws, a hollow tool, the edge of which is sharp and of a shape corresponding to that of the pieces of leather to be shaped. On the bed of the press is fixed a plate of hardened steel, made flat by planing, and which is carefully adjusted, so that when the hollow tool attached to the bolt of the press is brought down upon the plate, every part of the sharp edge of the

former is in close contact with the latter. The leather or fabric to be cut is to be laid on the steel plate, and the tool being brought down upon it, cuts to the required shape. Several thicknesses of leather or fabrics may be laid together and cut at the same time, and the press may either be worked by hand or machinery.

Among the most interesting of the great number of miniature articles, are two from Blackburn, one a beautiful miniature power-loom, with all the most improved breaks, and the other, a miniature dressing-machine, and a warping-mill, called "Jenny Lind."

Blackburn also exhibits three looms by Mr. Harrison. Two of the looms are $\frac{7}{8}$ wide, constructed upon the most approved system, and are very highly finished, the greatest pains having been paid to make them worthy of the town which bears so high a character for its manufacture of weaving-machinery. They are adapted for weaving cotton, woollen, flaxen, or silken cloths. One of the looms has Messrs. Kenworthy and Bullough's patent waft-stopping motion and temple applied, and is calculated for weaving not less than 220 picks per minute. The second loom, adapted for heavier goods, will weave not less than 200 picks per minute. The third loom intended to be sent is one made upwards of half a century since, composed principally of wood, a little iron, and some stone; and although running only 60 picks per minute, and destitute of all the recent improvements, has several very good points about it. This loom is intended to illustrate, by contrast with the others, the great improvements which have of late years been made in the construction of this kind of machinery.

Mr. Gordon, of Bristol, exhibits a delicately carved model of an anatomical figure in ivory, similar to those made in Italy of wax, showing the position of some of the intricate parts of the human body.

There is likewise a very exquisite *marqueterie* table of inlaid woods, the subject taken for representation being the Battle of the Nile: the centre portion of the table is a close copy of the well-known picture, in which a Greenwich pensioner is attempting to describe, by the

arrangement of the fragments of his broken pipe upon a table, the disposition of the naval armaments in the celebrated engagement; and the effect of the original painting is preserved with a fidelity which, considering the material to be dealt with, is really surprising. Around the centre-piece are ranged the flags of the various British ships engaged, and some of the vessels are displayed in action. Encircling this again is a border of flowers executed with the greatest freedom and delicacy, and surmounting the whole is a figure of Fame crowning the hero Nelson. The table measures 5 feet in diameter, the body of it is composed of walnut-wood, and the inlaid pieces comprise almost every known variety of wood, comparatively few of them being dyed. The greatest pains, too, have been bestowed, not only upon the upper surface, but also on the pedestal, which is ornamented with groups of flowers of the chastest design and most beautiful execution.

There is a specimen of paper-staining from Bristol, from blocks, and without manipulation, which will richly repay for the especial attention of visitors. The stained paper, which is of colossal dimensions, forms a portion of the wall of a room in imitative wood-panelling. The groundwork is in imitation of a peculiar description of white deal, much used on the continent for the lining of rooms, and which, from its delicate and ivory-like character, is much better adapted for the purpose than the woods used in England. It is struck into panel with mouldings of light and dark oak, seemingly real, and a massive bordering of imitative oak carving, composed of fruit and Indian corn. The fruits, &c., stand out in bold relief, and the border is as exquisitely finished as if carefully painted by hand.

Brighton furnishes a curious model of the Battle of Trafalgar, in wood. Mr. Constable, the constructor, commenced the work in March last, by forming the hulls first, and next fixed the bolts for the rattlins. He then fixed the decks on, and mounted the guns, which took him a long time. Next, he made 146 anchors, the figure-heads, and the rudders, the ornamental work on the sterns and

cabin windows being the most tedious task. The rigging is of thread, most skilfully arranged. The frame 7 feet long, and 3 feet wide. Each ship has her anchor dropped; and there will be a buoy attached, which appears to float; and these buoys are marked with numbers corresponding with the card of reference. The ships can be put in motion; so as to show Lord Nelson's mode of attack on the combined fleet off the Cape of Trafalgar. The number of ships is 73; and each ship carries the proper number of guns, and her naval trophies. Another curiosity from the same place, is a copper eagle, in size and shape exactly resembling the golden eagle (*Falco chrysoetos*), with the wings spread. The most remarkable part of the workmanship is the feathering of the bird. And a third one, is a watch of the size of a threepenny piece.

There is a very interesting heraldic oaken chair, its carving being a sculptured history of the kings and queens of England; executed by Mr. Shacklock, an operative, of Bolsover.

Mr. Haythorne Reed, of Burnham, Bridgwater, exhibits a new propeller, which, he says, will entirely supersede the use of both paddles and screw, having the advantage of great simplicity, of obviating the evil of backwater, consequently producing greater speed, and of enabling a vessel to be turned in almost the space which its length would describe in a circle.

A piano, with an octave movement to enable a player to trill with the finger, instead of spanning the octave, is likewise exhibited from Bridgwater; as also a piece of carving in English oak, with the subject of the Canterbury Pilgrims at the Tabard, &c., with other contributions.

A nail-maker, of Bromsgrove, has produced a thousand gold, a thousand silver, and a thousand iron tacks, the whole three thousand only weighing three grains! They are, doubtless, the smallest nails ever produced by the hands of man.

A skeleton clock, 2 ft. 4 in. in height, which goes three years without winding up, comes from Mr. Pace, of Bury St. Edmunds. This is obtained by six powerful springs, the united force being equal to 250-lbs. weight. They

are enclosed in six barrels or boxes; three are connected with chains to a fuzee on the right hand, and three on the left. The power is thus concentrated in the pinion on the second great wheel, and is conveyed up the train of wheels and pinions to the pallets, which are connected with the pendulum. The power is here reduced to a few grains; but is quite sufficient to keep the pendulum in constant motion. After the clock is first wound up, the chain unwinds from the smallest part of the fuzee, three turns of which allow the barrel to revolve once in 210 days. This is said to be the slowest motion ever produced. It registers the day of the month, the number of weeks and years it has been going since it was last wound up. From the same place, there is a barometer, of unique design, in highly-polished brass, containing three glass tubes, supported by scroll-work. The centre tube is the barometer, and those on each side move an index, which rise and fall, by turning a nut at the base of the stand. At the same time, by means of wheel-work, they turn the hands that are on two dials, one for night, and the other for day, indicating the state of the barometer.

Mr. Carrick, of Kent-house Academy, Canterbury, exhibits a curious piece of workmanship, a full-sized rosewood loo-table, curiously inlaid with upwards of ten thousand small pieces of rich and variously-coloured British and foreign woods, of at least a hundred different kinds. The centre compartment forms a large circle, in the middle of which is a small spaniel dog, surrounded by stars and other chaste devices, formed of almost countless small pieces of scarce and beautiful woods: and the remainder of the table is filled up with circles, half-circles, &c., in a great variety of colours and figures, which, altogether, have a very rich and splendid appearance.

From Carlisle there are two marble mantelpieces, admirable specimens of workmanship, turned out from Messrs. Nelson's establishment. The more elaborate and ambitious of the two is manufactured from white *Carara* marble, and the block selected for it turns out to have been of the purest character, scarcely a speck or disfigurement of any kind occurring to mar its beauty. The

design is in the florid-gothic style, similar to that of the new palace of Westminster. Not only in the minutiæ of carving, but, in general effect, it would be difficult to conceive a more beautiful piece of workmanship. The other is manufactured from a block of that rich description of marble which has been characteristically termed "black and gold;" and although it lays no claim either to the elaboration of carving or gorgeousness of design which are blended in its companion specimen, yet it presents an elegance and a massiveness, which are eminently beautiful and highly effective.

An improved turret clock is exhibited from Carlisle, consisting of a new adaptation of compound shafting and wheel-work, to give to a turret-tower, or steeple, a face on all the four sides. The faces of the clock consist of glass, the figures which show the hours are gilt on the inside surface, and consequently shielded from the effects of the weather. There is a contrivance for lighting up the four faces with gas-light—perfectly self-regulating; it lights itself at the proper hour, viz. at sunset each night, and nearly extinguishes itself at sunrise each morning; and it follows the setting and rising of the sun from the shortest to the longest day, and again from the longest to the shortest day, with only a half-yearly adjustment.

The wife of a clergymen in Cheltenham has furnished a lady's silk scarf made from silk, the produce of silkworms kept in an open building in an adjoining county. The lady gives the following interesting account of its manufacture:—"Having resided for about three years in a village in Herefordshire, the garden of which possessed a remarkably fine mulberry-tree, I wished to give my family an idea of the habits and natural history of the silkworm, and the method by which silk is produced. With this view, I procured a quantity of eggs early in the spring of 1847, which were hatched about May, and I placed the worms, 2,000 or rather more in number, in an outhouse in the garden. There they were attended, and fed by myself, and some of the juvenile members of my family, and in due time they spun; and, much wishing to turn the produce of their industry to some use, I

directed my attention towards making the scarf, which I have the pleasure to lay before you. The silk was wound from the cocoons, by my daughter and myself on a winding-machine, and afterwards I wove it into its present form. It has consequently never been in the hands of any manufacturer, and presents the same colour and quality as when taken from the cocoon. I may add, that the outhouse in which the worms lived, had no windows to protect them from the weather, which was unusually cold for the season of the year, as I think this point may illustrate the fact, that our English climate presents no insuperable obstacle to the cultivation of silk. The mulberry-tree was the common kind."

A journeyman cabinet-maker, near Chesterfield, exhibits an exquisitely carved "royal heraldic chair," taking this title from the idea of the designer, to embody in carving the descent of our gracious Queen from the Saxon line of our ancient monarchs, through the kings of Scotland. It is a large and massive regal chair, 7 feet 2 inches in height, completely covered over with carving, the material being fine old English oak. The general form is that of the ancient royal chairs of the middle ages; spacious seat, high back, arms or elbows, with enclosed and panelled sides, foot-rails, &c. The high back is a sort of panelled screen, perforated in quatrefoils, giving it all the richness of a diapered ground. It is flanked by two columns or pilasters, with enriched capitals, and surmounted by a pediment containing the royal arms of England, with supporters, motto, &c. carved out of solid oak, even to the chain of the gorgeous unicorn. Beneath this is the Prince of Wales's plume and coronet, with the riband and motto. The back of the chair, on its inside surface, has a border of heraldic shields, extending down each side, within the pilasters; and in the centre of the top, beneath the Prince of Wales's plume, are four other shields, in all sixteen, commencing with the arms attributed to Edward the Confessor, and assigning a new shield with every variation in the arms—all those borne by the sovereigns of England being inserted save those of Stephen, who is not in the descent. Thus we have the

Norman and Plantagenet kings, the Tudors, the Scottish line, and the Stuarts, the Electors Palatine, the Elector of Hanover and the Brunswick line, down to and including the royal arms of Queen Victoria. Then, two shields scocheon the ends of the elbows; one of the arms of Saxe Coburg Gotha, with the crown of the Prince, the other the arms of Saxe Coburg Gotha and England per pale—as denoting the union of the Queen and Prince Albert. There would still remain a considerable central space in the back of the chair; but this has been gracefully filled up with the insignia of the four orders of knighthood; those of the Garter, with its pendent George, in the top centre; on the sides are the collar, badge, and star of the orders of the Thistle and of St. Patrick; and in the lower centre the insignia of the Bath, each having its motto, &c. Beneath these the back panel is filled with cornucopias, oak-leaves, acorns, &c. The front edge of the seat has a border of vine-leaves and grapes, with the rose, thistle, and shamrock; and the front foot-rail has a large basket of flowers, &c.; the front legs are ornamented with grapes and other fruit. In the external centre of each side of the chair, beneath the elbow, is a circular panel, in which is carved in relief the monogram V.R. P.A. (Victoria Regina: Prince Albert), encircled by scroll foliage, &c. The top of each elbow terminates in a lioness's head, crowned with a city mace, supporting the crown of England. The low side-rail has the Tudor rose, encircled with the shamrock and thistle.

A ship-carpenter, of Cockermouth, exhibits a chair, on which he has spent his over-hours, for the last six years. It is made from a root of old oak, prepared by a peculiar process, so as to present a surface as close and smooth as ivory. The carving is most elaborate, and beautifully executed, every detail being worked out with the utmost sharpness. But for the Exhibition, such works would never have been heard of, beyond a narrow circle, in their own immediate neighbourhood. The Palace of Industry will make us acquainted with more artist-workmen, more men of original taste, more men of genius amongst our artisans and workmen, than we counted upon.

Mr. Wilson, from the same town, exhibits an elaborate specimen of caligraphy, representing our Saviour being taken from the cross, executed, at intervals, on a shop-counter, during the hours of business. The work has occupied the amateur-artist about ten weeks. The outlines are taken from an old print by Rubens, and have never been touched with a brush, although some parts appear as if they had been so shaded. That operation was performed with a piece of paper, when the strokes were damp, which gives it a pleasing effect. On each cheek alone are upwards of 2,000 strokes of the pen, made so as to imitate line engraving The work has been executed solely by the use of steel and crow pens, and Indian ink, with the trifling exception of some of the shading.

Mr. Martin, also of Cockermouth, exhibits a variety of articles, which have been subjected to a new process to render them waterproof. They are of every fabric, from the finest open lace to the fustian of the mechanic; each appears to be as if just cut from the web; not the slightest difference is observable betwixt those that had undergone his process of waterproofing and those that had not; even the most delicate silks are not in the least altered, either in colour, feel, or smell, except that they are perfectly impervious to moisture, the water rolling over them, as if from the duck's back or the cabbage-leaf. The most valuable characteristic of the discovery is, that, though cloth of any description, after having been waterproofed by Mr. Martin's process, will resist boiling water, which makes not, in fact, the slightest impression upon it; it is not in the slightest degree less impervious to vapour, the steam and even the breath passing as freely through it as before it was submitted to the waterproofing process, thus showing its incalculable superiority to the Mackintosh process, which, by impeding perspiration, is well known to be highly prejudicial to health.

Agriculture, though the most important of human pursuits, has hitherto had little or no advantage from science and mechanical skill. It is to be hoped, however, that we are approaching a period when there will be a com-

plete revolution in this respect. From Cork we have a model of an Archimedean agricultural machine, prepared on a scale of one and a half inch to the foot, and representing the machine, which is entirely constructed of cast and wrought-iron, with one of its cylinders in working order, and a clod-bruiser, and an ordinary harrow attached. Each cylinder can be raised or lowered by the regulating screws, to enable the cutters, &c., to enter and turn up the earth, at any depth of from one to ten inches, which it is presumed will be as deep as need be required in any ordinary case, and except where a great depth of the sub-soil is sought to be dislodged, and even this if necessary can be accomplished by a second working of the machine. This machine may be reversed, and worked from either of its ends, to which the moving power will be applied, so that the workings can be crossed and intersected if necessary. But the chief superiority of this machine is exhibited in the circumstance, that with the assistance of a cheap locomotive steam-engine of four or five-horse power, and one or two men to work and guide it, the machine will equal and effectually execute, in the one progressive operation, the performance of four or five ploughs if capable of being worked abreast, and with the superintendence of ten men to lead and handle them; whilst the clod-bruiser and a common harrow, for pulverizing the sods of earth that will be turned up, may be attached to it, which cannot be employed when using the plough; therefore it can be made more powerful than any other agricultural instrument, and will prove of immense utility in extending cultivation and productiveness among the extensive prairies of Western America, and the vast plains and undulating surfaces of Australia, where labour is scarce and expensive.

There is also a very elegant buhl table, containing figurative representations of the Battle of the Nile, in sixteen scrolls.

Cornwall exhibits a very beautiful and interesting illustration of the preparation of tin for consumption, commencing with the raw tin, following it through its

various stages of cleansing, smelting, refining, &c., and ending with perfect specimens of the white tin.

From Derby is exhibited a colossal Grecian vase, of the beautiful fluor-spar of that county.

A very brilliant contribution to the Exhibition comes from Derby, in a stove and chimney-piece. A bright steel drawing-room stove, with or-molu ornaments, has a porcelain hearth in five compartments, divided by burnished steel beads radiating from a centre. In the middle compartment is a view of Dovedale, and right and left are different views of Matlock and other Derbyshire scenery. The china slabs were made at Derby China Works, and the paintings were executed by Mr. Aplett, who has had several commissions from her Majesty. This is the first instance of the introduction of this material and style of ornament for the hearths of drawing-room stoves. The chimney-piece is of marble, with fluted columns in front, and beautifully inlaid with mosaic-work. The whole is the produce of the Derbyshire mines and quarries.

A pair of marine steam-engines, of twenty-horse power, are sent from Devonport, to illustrate a proposed construction for ships of war (applicable for larger engines) to be propelled by the screw. The principal objects of the proposed construction are: To have the engines as low as possible, by taking advantage of the space between the keelsons of the ship more completely than has yet been attempted with screw-engines. To combine the acknowledged advantages of the beam-engine with those of the direct-action plan of construction. To simplify the parts of the engine, and construct them with a view to extreme rapidity of motion, whereby to attain a given amount of power with the least possible weight compatible with the required strength and durability of the machinery, at the same time working expansively with a view to the variation of power employed and the economy of fuel. To arrange the machinery and boilers with a view to creating a ventilating current through the engine and stoking-rooms, and to occupy the least possible cubical space in

the vessel consistently with the desirable access to all parts for cleaning and repair.

In the western vestibule, two large bells, from the foundry of Mr. Murphy, of Dublin, have a place assigned to them; but if their tones be no purer than the poesy with which they are inscribed, the seldomer they are sounded the better it will be for musical ears. The following distich, in gilt lettering, appears upon the larger bell:—

> "At length, hear joy resound from Erin's voice;
> Albert commands, and Ireland's bells rejoice."

Mrs. Holloway, wife of a house-painter of Dorchester, exhibits a large quilt, remarkable for having been produced by the knitting-pin, and for the artistic taste displayed in its execution. The middle is in a handsome lace-work pattern, set off at the corners with tulips; and sundry other various and original designs are most tastefully interwoven from this part to the bordering, the style of which much resembles that of the most approved and gorgeous lace trimming. The quilt is lined with a very rich rose-coloured silk. The peculiar merit and ingenuity of this work will be understood and appreciated, when we state, that the whole of it has been knitted from one continuous, unbroken thread, on pins, by hand—not a single stitch having been sewn throughout,—and that the several elegant designs, which admirably blend one with the other, are not only the invention of Mrs. Holloway but are the spontaneous result of her reflections, as she proceeded with her work, no preconceived and ready-adjusted pattern being placed before her eyes, for imitation or assistance.

Douglas (Isle of Man) sends a model of a steam-packet, on a new principle, by which greater speed and security will, it is expected, be obtained, at a smaller expense of fuel than usual; a piece of sculpture, executed by a poor but ingenious mason, of Tam O'Shanter and Souter Johnny, on hearing the poem on that subject read, though he (the mason) could not read himself; a statue executed by Mr. Swinnerton; and the productions of a little girl,

twelve years of age, in imitation of flowers, made of Berlin wool.

From Edinburgh, there are two specimens of sculpture. The one is a colossal figure of a Scottish chief; the other is a group of three figures, "Orphans reading the Bible." Also a safety-carriage, upon an entirely new construction, which can be stopped from the inside, in case of danger. And a very ingenious construction, by Mr. Black, for folding sheets of books, periodicals, or, indeed, papers of any kind, and of course, greatly facilitating an operation now done by the hand. This useful invention is constructed in the shape of a box, on the top of which the sheet is fixed by means of points. Three turns of a handle draw the paper through an aperture in the top, and immediately afterwards throw it out on the other side neatly folded. Three sheets may be put through the process at once; for while the first and second sheets are being put into shape by folders inside the machine, a third can be placed upon the top and acted upon by the outside folder. The whole operation is performed with amazing rapidity, and the machine is, in every respect, most efficient.

Mr. Dalton, of Exeter, the ingenious lapidary, exhibits a beautiful table of native pebbles, which is unquestionably one of the most charming objects in the whole Exhibition.

Amongst the novelties sent from Exeter, there is a pair of carved Tudor bed-posts, made from a walnut-tree, by John Biss, brought up a thatcher. The columns are nine feet high, and 18 inches square at the base, resting on lion's claws; in front is the date, 1851; on the various panels are the Prince of Wales's plume and motto, the crown of Henry VIII. and his Queen, Catherine, with the letters H. K., taken from a crown gold piece of that date; the arms of the corporation of Bradninch and motto; the Queen's crown, with V. R.; the exact likeness of a lamb, with six legs, that was dropped last spring on the same property, and is now in good health, with the motto "Peace and Plenty" (the lamb figuring the former, the six legs the latter), and the

Tudor rose and motto. Above the vases are several bosses, carved in foliage of oak, ivy, &c., the whole being carved out of solid wood.

Mr. Bradley, painter, of Exeter, exhibits a most beautiful circular table of slate, about three feet in diameter, which are painted eighty distinct specimens of marbles, madrepores, and variegated stones, the product of Devon. The various specimens are imitated exactly. The beautiful polish and colour are retained, and the hard and cold nature of the material used, gives the table an appearance of genuineness, which it is difficult to resist.

A most beautiful model of a royal railway-carriage is exhibited from Greenheys; it is on a scale of 1½ inch to the foot, and is supposed to be for the Great Western broad gauge. The length of the platform is 3 ft. 9 in.; the breadth, 1 ft. 5 in. The length of the body of the carriage is 2 ft. 8 in.; the breadth, 1 ft. 1 in. The interior of the carriage consists of three compartments—a centre or throne-room, and a saloon at each end. The room in front of the carriage is supposed to be for the royal family, and ladies and gentlemen in waiting, and this communicates by a door with the throne-room. The compartment at the rear of the carriage is for the remainder of the suite, and has no direct communication with the centre. The body of the carriage is surrounded by a promenade, encompassed by a balustrade, supported by variegated pillars. At each corner of the platform is a British lion, with the paws fixed above the buffer rods, as if to keep them extended. The length of the centre room is 16 inches; that of the end rooms, 7 inches. The royal chair is situate at the back of the centre room, and is surmounted by the royal arms; there being, also, the Prince of Wales's feathers, and the star and garter in other parts. The throne and couches are of mahogany, cushioned with light scarlet velvet, and trimmed with lace, to match. The doors and compartments are glazed, and have moveable sashes. The body is painted a neat brown colour, and has circular ends. There is a door at each end, emblazoned with the royal arms, and a door at each side, leading to the centre compartment, bearing the

Prince of Wales's feathers. The roof is also surmounted with regal crowns. The hanging blocks are carved in wood, with a scroll-work, having a tiger in the centre. The wheels are chased with the stem and leaf of the vine; the axle-guards are also ornamented. The buffer springs and rods, bearing springs and tension-bars, are all in working order. The carriage is supported by eight wheels. At first sight, it would appear that a carriage of such length as to require four pairs of wheels, would not be calculated to turn curves with safety, as the flanges of the wheels, being in a direct line, might interfere with the curved rails. This difficulty is overcome, by placing two pair of wheels near to each end of the carriage, leaving a considerable space in the centre. This arrangement allows it to turn a curve with nearly the same facility as if it had but two pairs of wheels, while it gives the advantage of much less oscillation, and adds greatly to the security; for, if any particular wheel should fail—by the tire of the engine-wheel breaking—the remaining wheel at that end of the carriage would still support it.

Messrs. Walmesley and Co., silk manufacturers, Failsworth, near Manchester, exhibit a piece of silk-work, which they have been nearly twelve months engaged in producing, being a large representation of the Crystal Palace, full-sized figures of Queen Victoria, Prince Albert, and the whole of their children, together with the royal arms. The piece has been woven on a loom which takes six machines or jacquards, and 75,000 cards. The cost of the loom and machinery, before the work could be brought out, was £2,000. The cloth is said to be the richest ever manufactured in this country.

From Fifeshire is exhibited a sofa, in sculptured coal, by Mr. Williamson. It is 9 feet long, with three compartments or divisions, and is sufficient to contain seven people sitting on it. The front is elaborately ornamented and highly polished.

From Gateshead there is a veil of white linen thread, an exact counterpart of the tribute loyally paid by the Victoria Asylum to the Queen on the High Level Bridge. This will be exhibited on light blue satin. There is a

veil, similar in pattern, made from black woollen thread, and exhibited on orange satin. Another contribution is a Spanish mantilla of black woollen thread, exhibited on orange satin, which must strongly tempt many a maiden's heart to disregard the tenth commandment.

Glasgow contributes a gas-manufacturing and steam-generating apparatus. The manufacture of gas, at a trifling cost, for the supply of railway stations, gentlemen's country residences, farm-houses, &c., can be, it is said, accomplished by this machinery, and for that object alone it might be expected to become an indispensable requisite in connection with such places. The purity of the gas, arising from its being made from rosin, also constitutes for it a strong recommendation. Its chief advantage lies, however, in the union of this purpose with another—the generating of steam, both of which can be obtained by the same means. This is capable of being applied to numberless culinary and domestic processes, insomuch that it is deemed possible by it to supersede the necessity of an ordinary kitchen fire.

There are, also, very interesting specimens of a very useful mode of glass-silvering. The vessels thus made are composed of double glass, having an interstice between the two layers or coats, into which the silver is inserted, so as to form a lining. The intervening space being then hermetically sealed, the silver is effectually protected from atmospheric influence.

Mr. Clark, of Hastings, exhibits an engineering model, in plaster, on a scale of a quarter of an inch to a mile, of his proposed "Grand Ship Canal through the Isthmus of Suez," the line being from Suez on the Red Sea to Tineh on the Mediterranean. By this course, the route of ships to India would be diminished by 5,000 miles; and the discomfort of the present so-called "Overland route" would be entirely avoided.

Mr. Pitter displays a model of considerable size, of his Archimedean balloon, an invention which he first laid before the public in June, 1847, and improved upon in some plans published in June, 1848. The model is on the scale of one-twentieth of the proposed size, and con-

sists of a framework 6 feet long, surmounted by a representation of the balloon or aërostat, 3 feet in diameter, and 9 feet long, the whole standing about 6 feet high, and supported on wheels. The propelling power in this machine is produced by means of four paddle-wheels, set in motion by an engine; the paddles bearing in all ninety-six floats, which are made to "feather" during the revolutions of the wheels, by means of a very peculiar apparatus. These paddle-wheels give motion in a vertical plane, while the proper horizontal position is commanded by means of the Archimedean screw. By this combination of machinery, it is proposed to navigate the balloon in any direction through the air. In the actual machine, the balloon would have a buoyancy of about twelve tons, while the framework would be 120 feet in length. The balloon is to be attached to the framework, by means of ropes passing up from the latter to the former. The construction and arrangement is altogether different from that of any other proposed plan.

Mr. Judge, of Hampstead, has sent in an instrument, adapted to facilitate the operations of civil engineers and surveyors, by enabling them to take levels without the trouble of adjusting-screws. The instrument adjusts itself by means of a weight, fixed at right angles to the table whereon the theodolite rests, the table being hung in such a manner that the rod, to which the weight is attached, may be free to assume a perpendicular position wherever placed. The spirit-level merely serves to show that the suspended table is obedient to the force of gravity, and acts correctly. He likewise contributes a small model of an improvement in crank action. In the ordinary crank, there are two points in the course of its revolution, at which the mechanism connected with it would come to a dead lock but for the impetus previously acquired, which carries the wheels beyond those points. A steam-engine, for instance, cannot be started, when the piston connected with the crank is either at the top or the bottom of the cylinder. This inconvenience is obviated in steam-boats and locomotives, by the employment of two engines, the cranks of which are placed at

right angles, so that both together can never be in the position that renders starting impossible. He endeavours to remedy this defect of crank action, by attaching two connecting-rods to the rod of the piston, one being shorter than the other. This contrivance, as applied to the model, certainly seems to overcome the difficulty, for in whatever position the piston-rod is placed, the vertical movement up or down is not prevented.

Messrs. R. and W. Pilkington, of St. Helen's, exhibit, in stained glass, a splendid painting of the Archangel Michael casting out of heaven the great red dragon, taken from the 12th chapter of the Revelation of John. This painting is on one entire plate, measuring nearly 50 square feet.

Holmfirth exhibits a mechanical gem in the shape of a miniature steam-engine, weighing only three-quarters of an ounce, yet completing 3,600 revolutions in a minute; and a piece of flannel, spun and wove by hand, containing 140 picks in the inch, and manufactured in Staley-wood, by William Redcliff. It is said to be the finest fabric ever made out of wool.

Almost every one who has walked much about the streets of London must often have been annoyed by witnessing the perilous position in which women and young girls are placed while cleaning windows, and all who read the newspapers must recollect how frequently shocking and fatal accidents occur in this way. An ingenious contrivance, from Huddersfield, is exhibited, for cleaning windows much more rapidly and more perfectly, without the least danger. There is a model hydraulic engine, also from Huddersfield, measuring $2\frac{1}{2}$ feet by 2 feet. The model is of brass, is in working order, and is accompanied by a glass shade in another case. This engine supersedes, in many situations, the use of steam as a prime mover. We understand a patent has been obtained for the invention, and that it has already been applied in some of the mining districts with surprising success.

Mr. Ringham, of Ipswich, exhibits a group, consisting of a poppy root, leaves, and heads, out of which spring

three fine ears of tall, fully ripe wheat, with several blades around it, carved out of a solid block of lime-wood, and is so delicately fashioned, that on the slightest motion the ears and blades of corn, and the poppy heads shake as if they were as fragile as vegetable life.

Ipswich also exhibits an elaborate and appropriate specimen of carving in stone on a chimney-piece. The jambs represent science and wisdom, the former instructing youth how to conquer difficulties; the latter leading a young girl to the contemplation of the beauties of civilized life; these rest upon two semi-globes, upon which are represented War and Discord crushed upon the earth. The exterior represents the cereal and floral products of the earth, rising to and combining with the fruits for the good of man. The interior is an endless cable, in which is enclosed the hop and vine, which form the inner compartment, at the bottom of which are represented the materials of construction and the female attainments. The frieze, upheld by Science and Wisdom, represents the grandeur, glory, and hospitality of the nation, in which the Queen and Prince Albert appear at the head of Commerce and Industry, represented by *basso relievos* on each side of the centre, which is a mass of foliage, representing the national emblems of the rose, shamrock, and thistle intertwined, in which is embedded an allegorical date of the year (which is composed thus—Time showering garlands upon the year Fifty-one, and Fortune turning out her cornucopiæ in return), and, extending itself right and left, forms the canopy and framework to the whole, which is surmounted by an enriched shelf. The dimensions are 6 feet 9 inches wide, 5 feet 6 inches high, and 1 foot 8 inches deep.

In the central passage is a monster telescope, erected by Mr. Ross, the optician, who has constructed the glasses for it; one of which will be 12 inches in diameter. The iron-work comes from the establishment of Messrs. Ransom and May, of Ipswich. Immediately adjoining, is placed a large and elegantly-ornamented cast-iron dome from the Coalbrook-Dale Foundry. A number of elegant castings from the same establishment are enclosed in it.

This dome is intended to illustrate the artistic ability of the *employés* of those celebrated works.

From Jersey, Mr. Amy exhibits a model barque, rigged and fitted complete, made by himself last winter, when unable to work at his trade from ill-health, (he being a ship carpenter). Mr. Amy states that all the timbers are of one mould, certainly a peculiarity; and if the model is capable of being applied to large vessels, a great advantage to ship building. Mr. Jouatt exhibits a beautiful piece of workmanship, combining fowling-piece, rifle, and pistol; the barrels inlaid with gold; the stock elegantly carved and mounted with silver; the whole a very handsome as well as useful piece of manufacture. In the first place, it is simply a pistol; by a joint at the end, a gun-stock is firmly affixed, the pistol barrel removed, and the fowling piece substituted; this being removed, a rifle barrel is affixed.

Jersey also exhibits a splendid piece of cabinet-work, forming a chiffonier, an escrotoire, and applicable to other uses, the interior fittings being beautifully finished with solid satin-wood, the whole formed of oak, beautifully carved and polished, the panel's tapestry representing the emblems of England, Scotland, and Ireland; the back is splendidly carved with figures in *bas-relief*, the expression of the faces beautifully shown, the design being King John signing Magna Charta.

John Brayshaw, of Lancaster, journeyman tailor, exhibits a curious specimen of needlework. The piece of work consists of an ornamental quilt, 12 feet, by 10 feet, and representing various picturesque scenes and subjects, grouped in a number of squares, and wrought with the needle from small pieces of cloth. Many of the representations are copies of some of the choicest productions of George Morland, the centre piece exhibiting a figure of Britannia ruling the waves. Each square, of which there are 45, exhibits a different subject, and contains a hundred pieces of cloth of various colours. The corners of the counterpane are filled up with the national emblems, and the borders are traced round with scroll work.

The leisure-hours of ten years have been engaged by the artist in its production.

Mr. Pegler, of Leeds, exhibits a cloth designed for the communion table, composed of linen weft and silk warp, presenting a very magnificent appearance. The design is exceedingly elaborate, containing the "Saviour administering the last supper to his twelve apostles," as a centre piece. The border, running right and left, is composed of Corinthian scrolls, with the passion flower, and wheat, and grapes. The middle contains the Bible and the mitre. The sides have each a large cross, with I.H.S., with gloria. We believe this is the first production of the kind on so large a scale.

Among the great number of miniature articles, Leeds sends a violin, after Antonio Straduarius, probably the most celebrated maker of any age. Although only $4\frac{3}{4}$ inches in length, this instrument is perfect in all its parts, and is enclosed in a sycamore case of admirable finish. Altogether it is an exquisite place of workmanship, the instrument itself being smaller than the celebrated *petite* violin of Mons. Jullien.

A new invention, in the form of a portable steam-pumping apparatus, from Leeds is designed for engineering, agricultural, and domestic purposes, for lifting or forcing water any required distance or height, at all pressures, and under every variety of circumstances; also, as a replenisher of water to steam-boilers, working hydraulic presses, water-cranes, and other machinery. A peculiar feature of improvement in this apparatus is its particular adaptation to transmit the water through the pipes to and from the pump in *one continuous stream:* hence its capability to fetch or force water any required distance at a higher velocity, without shock or injury to the pipes and machinery. The engine and pump are complete in one portable machine, the size of the whole apparatus being little more than its own fly-wheel.

From Limerick, there are some beautiful specimens of lace, such as flouncings, dresses, squares, scarfs, &c., which may be well compared with similar continental productions.

From Liverpool a model of the docks, and part of the town, forms one of the most interesting objects in the Exhibition, 40 feet in length, 10 feet wide, and on the scale of 8 feet to a mile, represents a surface of five miles. The docks are represented as filled with 1,600 tiny vessels fully rigged, and the model altogether forms a very beautiful object, and impresses us with the magnitude of Liverpool as a port.—The model is chiefly cut out of wood, the finer portions being constructed of paper, and the water represented by glass stained of a greenish tint, and silvered in order to reflect the ships which float on its surface. Its cost is stated to be £750.

A gilder named Wallis, living at Louth, Lincoln, exhibits a singular piece of carving. It consists of an immense nosegay representing "Spring," composed of 1,000 representations of 47 kinds of spring-flowers and buds, elegantly entwined around stalks of the apple-tree in blossom, and accompanied by their usual attendants, the caterpillar and other insects. The whole is suspended by carved drapery in the form of ribbons, &c., from the head of a lamb, supported by a shepherd's crook, encentered by a nest of the "blue-capped titmouse," with the old birds conveying food to the young brood in the nest; and ornamented with a beautiful grape cluster and vine leaves as a pendant.

Among the things contributed to the Exhibition by London, is the gigantic electric clock. Time in the Crystal Palace will be regulated by several electric clocks, of large dimensions, made by Mr. C. Shepherd, of Leadenhall-street, on the improved plan recently invented by him. The largest of these clocks will be on the outside of the building, over the northern entrance to the transept, and the appearance of the dial and hands will be quite as novel as the interior arrangements. The diameter of the dial will not be less than 24 feet, but it will only be, as is seen in our illustration, a semi-circle, for it was found that a complete dial of that size would detract from the appearance of the building. Mr. Shepherd had the option of having a circular dial of 7 feet diameter, but that he considered would be too insignificant for the pur-

FIG.1.

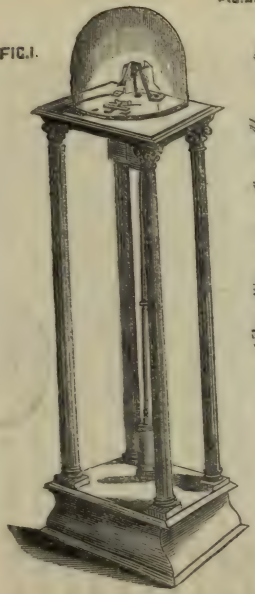

Fig. 1.—PENDULUM.

FIG.2.

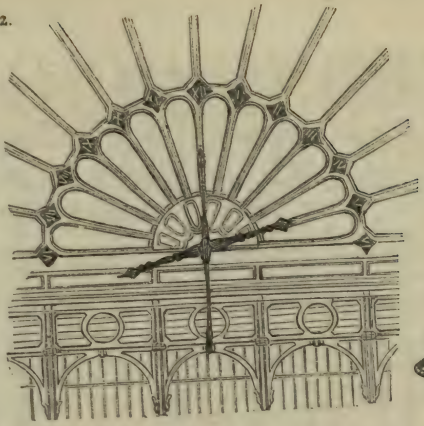

Fig. 2.—DIAL.

FIG.3.

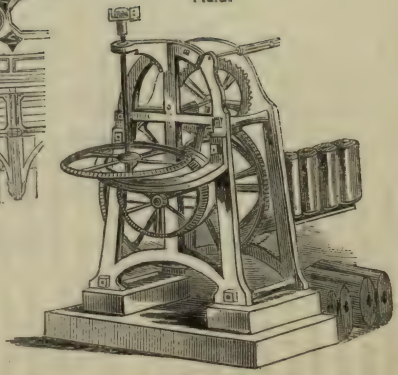

Fig. 3.—MECHANISM.

THE ELECTRIC CLOCK.

pose, and he preferred the larger dial, with its semi-circular proportion. There will not, indeed, be any clock-face, such as we are accustomed to see, but the hours will be painted in compartments, on the arch of the transept, the Roman numerals appearing white on a blue ground. The twelve hours will be included in the semi-circle, beginning with VI on the left hand, ascending to XII at the top of the arch, and descending to VI on the right. That the hands may indicate the time at all hours of the day and night, they are made double, so as to point both ways; thus, when the hour-hand has arrived at six in the evening, it will move off the dial on the right, and the opposite end of the hand will become the index to the hours. In the same manner, the opposite end of the minute-hand will recommence its duties as index every hour, and then again pass off the dial. In the intermediate times, the double part of the hands, though of no use in pointing out the hours, will serve the important offices of equipoises and counteracting vanes, to equalise the force of the wind; for, without some such provision, the wind, acting on a lever 10 feet long, might have impeded the action of the clock, or have caused irregularity. The length of the double minute-hand will be about 20 feet, and that of the hour-hand 16 feet, to be made of gilded copper. In addition to this monster clock, there will be two electric clocks, with circular dials, 5 feet in diameter, placed inside the eastern and western entrances, and other smaller ones in different parts of the building, all of which will be of similar construction, and will all be in connection with, and regulated by the same pendulum.

The distinctive feature of Mr. Shepherd's electric clocks consists principally in the mode of giving impulse to the pendulum. In the electric clocks previously constructed, the pendulum at each vibration touched a metal stud in connection with a voltaic battery, and by that means communicated instantaneous but temporary magnetism to a coil of wire enclosed within the bob of the pendulum, and caused it to be attracted by a combination of permanent steel magnets placed within the sphere of attraction.

The impulse to the pendulum was consequently derived from repeated magnetic attractions; and, as voltaic batteries are constantly liable to variation, the movement of the clocks varied accordingly. In Mr. Shepherd's arrangement, the impulse is given to the pendulum by a spring, and the electro-magnetic power is employed only to relieve the pendulum from the action of the spring during the return of vibration. By this means the impulse is altogether independent of the varying power of the battery, and the action is constantly the same. Another part of Mr. Shepherd's improvement consists in the mode of giving motion to the hands, which are made distinct from the pendulum, and thereby another cause of irregularity is avoided. The pendulum is, indeed, detached completely from the mechanism, its sole use being confined to regulate the passage of the electric currents. An ordinary second pendulum, of the size used in an eight-day clock, is all that is necessary to put in action the largest electric clock, and a pendulum of that size will be employed for working the great clock at the Crystal Palace, and all the other clocks in connection with it. The detachment of the different parts of the same clock from each other, yet the connection that exists between separate clocks at considerable distances apart, constitute a remarkable feature of the invention. The pendulum may be hundreds of yards from the clocks it regulates, the striking parts may be placed as far off from the dial, yet the connection between twenty of such clocks is so intimate that they will all respond instantaneously to the vibration of a single pendulum, and move invariably together.

The mechanism of the clock, a view of which is given, will be fixed in the south gallery of the transept, at about 48 feet below the centre of the dial, and motion communicated to the hands by means of a rod made up of several lengths of brass tubing screwed together, and of $1\frac{1}{2}$ inch in diameter. The clock frame is much lighter than usual, as the ordinary heavy weights are entirely dispensed with. There are two wheels within the frame, placed vertically—the escape wheel, to which the power

is applied, of 10 inches diameter, and a larger or central vertical wheel, of 18 inches diameter, working into the pinion on the arbor of the escape wheel, which is in two parts, the teeth of each part being placed in opposite directions; on one part the click and ratchet escapement acts, being moved by the electro-magnets, while the teeth of the other part are employed to lock the train, and prevent it running forward from the action of the wind on the hands. The large wheel revolves once in two hours, the spindle of which projects beyond the frame, and carries a bevelled wheel of 12 inches diameter, placed vertically, which revolves with it. In order to give motion to the vertical rod already described, the bevelled vertical wheel works into a second bevelled wheel placed horizontally; and above the first, on the axis of the horizontal bevelled wheel, the vertical rod or shaft revolves; and by means of wheel-work at the top of the shaft, the hands of the clock are also made to revolve.

The whole will be kept in motion by a series of powerful electro-magnets, eight in number, on which is wound a total length of 25,000 feet of copper wire, of the size usually denominated, "No. 18, Birmingham wire guage," the weight of the wire being nearly one and a half cwt. Six small batteries of Smee's construction will be used in connection with the electro-magnets. Mr. Shepherd prefers Smee's battery to any other, on account of its simplicity, and the ease with which it is recharged when required.

Among the productions of art of this country, in the Exhibition, are a quantity of carvings, and other decorative works, by Mr. Rogers, of Carlisle-street, Soho-square. The chief attraction is the beautiful carved boxwood cradle, made for the Queen, and which is sent by the gracious permission of her Majesty. The cradle is carved in the finest Turkey boxwood, and was in hand nearly two years, delays having been occasioned by various circumstances, principally by the difficulty of procuring wood of high quality and sufficient size, to render as few joints as possible necessary. The shape of the cradle, which consists of flat head and foot boards, elaborately carved in

high relief, and united by a semi-cylindrical trough, was suggested by her Majesty, partly in consideration of those representations of cradles which generally appear of this form in early Italian and Flemish pictures; and probably no form could have been adopted which so well exhibits to the eye all the minutiæ of the enrichments, which are profusely introduced throughout the greater part of the work.

The other articles are the following, several of which are exceedingly beautiful:—

A carving of English fruit and flowers, &c. (as a border to a glass), 11 feet high, 7 feet wide; a wreath of flowers in boxwood, the property of Mr. N. Wilkinson, in a case containing twelve specimens of boxwood carvings; head of a crozier; four grotesque masks; a bracket, in boxwood, James I.; a casket in various woods, carved in scrolls, foliage, monograms, and crests; an emblematical cup, William III.; a royal trophy, 5 feet by 4 feet; four brackets in satin-wood, composed of aquatic flowers, rushes, reptiles, and herons; two gold ornaments, enriched with white porcelain; specimens of flowers used in the reredos of St. Stephen's, Walbrook; a boldly carved oval in pear tree; a lady's satin-wood reading-table; a glass bordered with light flowers, entwined with moths and insects; a lion's mask; a bunch of dead game; shell fish; an Italian canopy; an elaborate salt-cellar and spoon, in boxwood; a toilet-glass, suggested by her Grace the Duchess of Sutherland; Sir Walter Scott, in boxwood, begun by Joseph Engel.

A brickmaking machine is exhibited, capable of making forty bricks per minute.

Mr. John Whitehouse, of 10, Tottenham-court-road, has constructed a pair of spectacles for the Exhibition, made of steel, of the ordinary size, but so light, that, including glasses of strong magnifying power, they only weigh 10½ grains, or half a grain less in weight than the quarter of a sixpenny-piece. He also exhibits a pair of standard-gold spectacles, of the full size, the value of the gold contained in which will amount but to two shillings.

A beautiful carpet, presented to the Queen, and by her Majesty exhibited, is the production of the leisure hours of a number of ladies, and is a good specimen of their industry and taste, in rivalling the finest productions of the continental looms. This carpet is thirty feet long, and twenty feet wide, executed in Berlin wool, in 150 squares, from paintings of the full size, designed and executed by Mr. J. W. Papworth, F.R.S., B.A., and Mr. W. B. Simpson, decorator, Strand. Each lady, upon the payment of a guinea, had the material, and a square of two feet, sent her for execution. The square is composed of 340 stitches on each side. After completion the squares were returned, and fitted together as a whole. When finished, it was submitted to the inspection of her Majesty the Queen, before being placed in the Great Exhibition. The ultimate presentation to the Queen was decided upon, by a majority of the executants, of 253 to 37. The projectors consider its value to be £800, but that, if worked by the loom, it could not have been sold for less than 1000 guineas. They expect, by this example, to demonstrate, that hand-labour can be employed better and cheaper than machinery, in such articles of manufacture, and, therefore, open out a new field of industrial employment to those ladies who have encountered the reverses of fortune.

Mr. A. Siccama, exhibits a case of patent diatonic flutes. These flutes are exhibited as improvements on the old flute, being capable of producing the various enharmonics required to bring out all the major and minor diatonic scales in perfect tune. Messrs. Williams, Filmore, and Mason, Guildford-street, a bronze table. Mr. Yerbury, a diaphragm-pipe, in which the points of the tube and bowl being separated, the oil is prevented from fouling the tube, and the smoke and tobacco are kept dry.

Mr. Nicholay, of Oxford-street, has arranged the series of American furs, partly contributed by the Hudson's Bay Company; the chairman of which, our readers may remember, promised, last year, at the first meeting in the Mansion-house, respecting the Exhibition, "that the

finest beaver that could be obtained, in the Company's territories, should be forwarded to the Exhibition." Mr. Nicholay has also prepared a set of the skins of animals of this country.

Mr. Masters, of Regent-street, exhibits some ingenious machines by which the operation of frigorific mixtures is brought to bear on the substances to be frozen, so that they may be used with very little trouble, and with the greatest effect. The preparation, intended to be converted into ice, is put into a white metal cylinder, that is placed on a pivot, to which a rapid rotary motion may be given, by a handle. Outside that vessel there is a space, to hold the freezing mixture, and on the exterior of that there is a hollow cylinder, to hold pure water. The operation of freezing in this machine depends on the expansion of the substances employed as freezing materials during combination; for all bodies, when expanding, absorb heat. A mixture of Glauber's salts and oil of vitriol will cause a reduction of temperature equal to 47 degrees of Fahrenheit's; by such a mixture water, at a temperature of 70 degrees, may be reduced to 9 degrees below the freezing point. There are other frigorific mixtures much more effective, but the most available in practice are the cheapest and the most convenient in use. In all cases, the more rapidly the combination of the substances takes place, the greater is their frigorific effect; and in the freezing machines of Mr. Masters the operation is expedited by the rotary motion, so that, in a few minutes, an ice, ready for the table, may be produced. The rotary motion is also made to agitate the strawberry cream, or other preparation, by which means it is more intimately blended with the ice, and the separation of parts that would otherwise take place is prevented. By the same process, the exterior hollow case of water becomes converted into a cylinder of ice, that may be removed, and placed on the table, for a wine-cooler.

The metropolis sends for exhibition an immense number of musical instruments. Among them is a gigantic church organ, containing upwards of eighty stops, with an independent pedal organ upon the largest scale. There is also an interesting instrument, designed by Col.

P. Thompson, M.P.—an enharmonic organ—the object of which is, by minute subdivision of the scale, to attain a perfect intonation in all the different keys. The ingenious colonel also exhibits an enharmonic guitar, the design of which is somewhat similar. No class of musical instruments is, we believe, unrepresented; and, as might be expected, pianofortes are most numerous.

Prominent among the working mechanisms of the Exhibition is a new and powerful pump, by Mr. Appold. The water is not discharged through a spout or orifice, but it pours, over two sides of a tank about four feet wide, in a continuous torrent, the water being raised above the edges of the tank two or three inches. In this machine there are no acting-valves, no cylinder or piston, as in other pumps, but the water is raised by what is commonly called centrifugal force. The action of this force is most clearly perceived in those centrifugal pumps, which consist of a straight perpendicular pipe, and two hollow horizontal arms, to which a rapid rotary motion is given. The lower end of the perpendicular pipe being immersed in water, the rotary motion causes the water in the horizontal arms to be thrown out, water rushes up the perpendicular shaft, to supply the place of the fluid ejected, and by this means a continuous and rapid flow takes place, so long as the machine is kept in action. There are many inconveniences, and much loss of power, attending this arrangement, consequently centrifugal pumps have been hitherto little used. In the application of the same principle by Mr. Appold, the inconvenience of the old form is remedied, and, to judge from the effects of its action, it far exceeds, in capability of discharging, within a given time, any other known mode of raising water, not excepting the hydraulic belt. Instead of the straight shaft and horizontal arms, Mr. Appold's pump-apparatus consists of a circular fan, closely resembling in form the blowers which have recently been brought into use as substitutes for bellows. Two discs, with holes in their centres, are joined together by curved partitions, which form about eight separate compartments. A rapid rotary motion is given to the instrument when immersed in water, by which means the fluid is thrown out of the

curved compartments by centrifugal action, a fresh supply rushes in through the central openings, and thus a continual flow is maintained. The water is not, however, thrown about in the air, for the rotating instrument is placed under the surface, and raises the fluid to the top of the tank, from which it is to flow. An instrument ten feet in diameter will pump 140,000 gallons per minute; one double that size will pump 560,000 gallons; and a machine forty feet in diameter will discharge the enormous quantity of 2,240,000 gallons per minute. Such a power, brought to bear on the draining of marshes, for which it is specially applicable, would prove most effective. The loss of power, in the use of this centrifugal pump, it is calculated, would not exceed thirty per cent. With the one-foot pump exhibited water has been raised to the height of sixty-seven feet, when moving with the velocity of 1,322 revolutions per minute.

The Copying Electric Telegraph, by Mr. Bakewell, exhibits one of the most surprising and useful results of the application of electricity to the common purposes of life. The writing of this telegraphic apparatus, which is white, on a blue ground, has very much the appearance of writing done on design paper, or such as may be seen in use, by ladies, for working figures on cloth in Berlin wool. The message, which is meant to be forwarded, is written on tinfoil, with varnish. This writing is fixed to a revolving cylinder, which is connected with the conducting wire. At the station where the message is to be received, a piece of paper, saturated with a certain chemical solution, is fixed to a similar cylinder. As soon as the electric current is made to flow, the contact is broken always as the point passes over the writing, the varnish being a non-conductor. As long as the current is unbroken, the receiving-paper is being changed to a blue colour, the writing at the same time becoming visible, and is formed of a number of small and intimately-connected square white spots. This telegraph transmits copies of the handwriting of correspondents so exactly, that their signatures may be identified. This is copied at the rate of one hundred and thirty letters per minute. When

we consider the process by which a message is produced by Mr. Bakewell's telegraph, we cannot but feel delighted with the wonderful perfection of the copy. Although the writing is far from being as clear as ordinary penmanship, it is sufficiently distinct for all useful purposes, and is as distinctly legible as the largest number of copies of letters made, in counting-houses and lawyers' offices, by the copying-machine. The writing is much clearer when the paper is first taken from the instrument; and Mr. Bakewell is still experimenting, with a view to ascertain the best kind of solution for the purpose.

Messrs. Maudslays and Field, the well-known engineers, exhibit a steam-engine of six-horse power, employed in working a coining press on a new construction. The mode by which the impression on the metal is produced, and the method of working, is different from any that has hitherto been adopted, and the sight of the press in action will form an interesting feature of the Exhibition. It has been proposed, that it should be employed in stamping medals, impressed with an appropriate design, to be sold within the building, the proceeds to be at the disposal of the Commissioners; but the sale of anything beyond refreshments within the precincts of the Crystal Palace has been so forcibly prohibited in the rules hitherto published, that the Executive Committee are reluctant to depart from them; at the same time, it is felt that much of the interest attached to the possession of such medals would depend on having seen them come from the press. The Committee are thus on the horns of a dilemma; but it is very probable that in this, and in some similar cases that must arise, exceptions will be made, under proper regulations, to the general rule. Messrs. Maudslays and Field, in addition to the coining-press, have contributed several models of different kinds of machinery and engines, which will form an illustration of many of the important works they have completed.

Steam-engines are characteristic of this age of machinery, being every day applied to new and important purposes. Among other contributors are the Great Western Railway Company, who exhibit the most power-

ful broad-gauge engine ever constructed, called the "Mammoth;" and the London and North Western Company, who exhibit their beautiful and powerful narrow-gauge engine, called the "Liverpool."

Messrs. Penn, of Greenwich, exhibit a pair of marine paddle-wheel steam-engines, of twelve-horse power each, which will illustrate, on a small working scale, the perfection attained in the construction of such engines. This pair of engines will, we understand, be kept at work, for the double purpose of exhibiting their action and of supplying some of the steam power that will be requisite for driving the various mechanisms to be exhibited in motion. Messrs. Penn have, also, a pair of thirty-horse power marine steam-engines for driving a screw propeller, and some highly-finished models.

With respect to the working of engines in the Crystal Palace the question arises, What is to be done with the waste steam? Marine engines are, in this country, made without exception on the condensing principle, and are worked with steam at low pressure, that is to say, instead of employing the elastic force of steam to move the piston, the principal agent is the pressure of steam of comparatively small elastic force acting against a partial vacuum caused by the condensation of steam in a condenser. To produce an efficient condensation, a large quantity of constantly renewed cold water is required, for which purpose a pond is often seen near the engine houses of factories, where condensing engines are employed, and the water in those ponds generally indicates the object for which it is employed, by the vapour arising from its surface, the water having been warmed by the process of condensation. As, in all probability, there will be several condensing engines employed at the Crystal Palace, there will consequently be an ample supply of warm water, and it may be worth considering whether it can be applied to any use. If allowed to flow into the Serpentine, that so-called "river" might for the time be converted into a tepid swimming bath.

Amongst the novelties at the Great Exhibition, are some plans and models on the most extensive scale for the

better protection of the coast, in the event of any attempt at foreign invasion, which is a subject of deep interest to many persons, both military and civil, though we must confess we have not the shadow of any apprehension of such an event. The inventor is Mr. W. D. Stevens, a gentleman, highly appreciated as a practical mechanician, engineer, and artist.

Amongst the models exhibited, is an interesting one of London, made on a scale of 8 inches to the mile, and containing in all 96 square feet. It represents the exact situation of all the public buildings, churches, bridges, railways, &c., with the Thames, from Battersea to Rotherhithe, and shows the different elevations of the streets. This model cannot fail to be extremely interesting to foreigners and strangers visiting London, and a view of it will greatly aid them in forming a general idea of this great metropolis.

A working model of a new system of railway propulsion is exhibited, which altogether dispenses with the locomotive engine; is free from noise and smoke, and is entirely under the easy control of the conductor for stopping or reversing the train when necessary, without loss of power. It is proposed to apply it to the omnibus traffic of large towns, in such a manner as not to cause any interruption to the ordinary street traffic.

Mr. John Gifford, gem-engraver, at the Royal Polytechnic Institution, contributes to the Exhibition four intaglio engravings on cornelian. The subjects are a lion, tiger, elephant, and Alpine goat. This gentleman has been, at various times, a successful exhibitor at the Royal Academy.

A most ingenious and tasteful piece of cork cutting, in bas-relief, is exhibited by Mr. Byrn. The subject is a sylvan landscape, with figures engaged in the sports of the period of Charles II. Its form is circular, and calculated for a frame. On either side, meeting at the top, is a tree. Above, in the centre, a hawk is about to strike a heron, and in the lower ground, on the right, stands a falconer, with a hawk on his right thumb, and his left arm leaning on a gate. In the central foreground are two dead

boars, watched by one of the dogs used in boar-hunting. On the left lies a stag, and near reclines a peasant youth.

Great attention has lately been paid to the construction of life-boats; almost every thing bearing that name having heretofore been as clumsy and unfit for its purpose as well could be made, though it is of enormous importance to have boats of this kind really adapted to their uses, and generally used by all passenger vessels. Several life-boats are exhibited, one, which is remarkably beautiful in form, is by Mr. Bonney; clinker-built, with planks of gutta-percha. The sides are doubled from the bilge to the spar-deck, and divided into water-tight compartments, and the fore and aft parts of the boat are also divided into water-tight compartments. She has been rowed and sailed on the Thames and the Serpentine, and many experiments made with her. She was repeatedly filled with water; men endeavoured in vain to overturn her, and she sailed full of water apparently without the least impediment, though ordinary boats, under such circumstances, would have been wholly unmanageable and useless. The yacht being hauled over, and so half-filled with water, upon being released, righted at once of herself. Mr. Bonney asserts that she cannot be capsized or sunk by accident, and hardly intentionally by powerful force applied to her. The plan is applicable to crafts of all sizes, and of any external lines, so that boats already in use can have the principles of this yacht applied to them.

The science of meteorology has derived immense advantages from the invention of self-registering instruments, by means of which the variations that occur during every moment of the day and night may be correctly registered, without the necessity of having attendants constantly watching. Some very ingenious instruments of this kind, which have been tested by use in the Royal Observatory, at Greenwich, are exhibited by Charles Brooke, Esq., of Keppel-street, their inventor. The variations in the declination and dip of the magnetic needle, the variations of temperature, and of the state of moisture of the air, and the variations of atmospheric pressure may, by these means, be correctly registered without any trou-

ble, and after the lapse of several hours, the observer, on going to the instruments, finds recorded on paper all the changes that have taken place during his absence. Photography is the operating agent in these records, and its application for this purpose affords a striking illustration of the influence which discoveries in one branch of science have in advancing others with which they would seem at first to have little connection. The art of taking portraits and views by the agency of light, has apparently no connection whatever with the science of meteorology, yet it has proved a most valuable assistant in meteorological observations, by presenting the means of obtaining correct registers of the changes that are continually occurring. In the instruments invented by Mr. Brooke, the application of photography, to record the rise and fall of the mercury in the thermometer, affords the clearest illustration of the mode of operation. A plate of metal, in which there is a very narrow slot, is placed over the tube of the thermometer in such a manner that the mercury completely obstructs the passage of the light so far as it ranges; but the light passes through the upper part of the slot. At the back of the tube there is a vertical cylinder, which revolves by clock-work once in twenty-four hours. This cylinder is covered with photographic paper, which is kept moist by a glass cover. As the cylinder slowly revolves, all the upper part of the paper where the light passes is darkened, and the lower part, being protected from the action of light by the mercury, remains white. Thus if there were no change in the temperature, the division between the dark and the light parts of the paper would present a straight horizontal line. If the mercury fall by diminished temperature, then a large space is exposed to the light, and if it rise the dark portion of the paper is diminished; thus the mercury, by acting as a screen from the light, serves to indicate on the paper the heights to which it has risen and fallen during the revolution of the cylinder. During the night the photographic effect is produced by the rays of a lamp reflected on the tube. Mr. Brooke's instruments for registering the variations of the magnetic needle are

somewhat more complicated, but they are equally effective, and depend on the same principle. The apparatus is kept in the dark, and the rays of a lamp are concentrated by a concave mirror on to a horizontal cylinder, covered with photographic paper, and protected from evaporation by a glass. The small mirror is attached to the magnet the declination of which is to be recorded, and, when any deviation takes place, the small flame of the lamp, reflected to a focus on the cylinder, assumes a position more or less westerly, in consequence of the inclination given to the mirror by the deflection of the needle. The register is in this case made by lines drawn on the paper by the photographic agency of the concentrated flame.

Mr. Jones, of the Strand, contributes a watch, which obtains a dead beat of the seconds hand, with a single train of wheels. In the measurement of minute divisions of time, it has been considered a matter of some importance to make the seconds hand indicate at once, and distinctly, each second as it passes, which cannot be done with the quivering beat of a common hand. To effect this object, a second train of wheels has been hitherto employed, but Mr. Jones contrives to dispense with this encumbrance, which tends to make the movement irregular, and in the gold watch exhibited, the dead beat is obtained by an alteration in the escapement of a single train.

A lilliputian gun is exhibited, not more than $4\frac{1}{2}$ inches, long, and weighing only a quarter of an ounce. It is a single-barrelled percussion, with all the modern improvements, and is capable of being loaded and fired with the utmost accuracy. The stock is of maple and the barrel is twisted. The percussion lock is composed of no less than fifteen separate pieces, and some of these are so small as to be almost imperceptible without the aid of a glass.

The lovers of the fine arts perhaps are aware that only a very few paintings are exhibited at the Crystal Palace. One of these is by Edward Armitage, and owes its

introduction to being executed in silica colours—a new invention.

Gaines, Sanders, and Nicol, of Birchin-lane, have contributed a very interesting model representation of the process of manufacturing silk and felt hats. The model, which is divided into two parts—one for silk and the other for felt—is again subdivided into the various apartments required for carrying on these two branches of hat-making. There are a number of model men and women pursuing the different branches of their art, the figures being 6½ inches in height, and all the instruments of their art on the same scale, including irons, rounding machines, rules, brushes, bottles, scissors, needles, and in one case we observe a miniature pint of porter, but of course not in the women's department. In addition to the illustration which the model gives of hat-manufacture, the object is to show the peculiarities in the process of making the peculiar kind of hat, the body of which is made of linen and cork, covered with silk plush, of unusual fineness, intended to show the perfection to which this branch of art has been brought. In the first department, lilliputian hatters are seen in their different shops diligently executing the different branches of their trade. To produce a felt hat, the workmen are busy in the various processes peculiar to its manufacture. In this section, also, the materials are submitted to view, being two kinds of wool, cleared rabbits' and carded Saxony, which, by being rolled together, become matted, or felted, so as to form the material of the felt hat. This part of the model is furnished with its large hot-water tank, around the planks of which the workmen are standing, to carry on their scalding, felting, and blocking operations.

Mr. Baillie, of Cumberland-market, has executed upon glass a copy of Mr. Wood's picture, "Shakspeare reading one of his plays to Queen Elizabeth," in a style that shows great proficiency in an art hitherto but little practised in this country. The brilliancy of the colours, and the delicacy of the shadowing, especially in the flesh tints, render the work quite a curiosity in its way, while the

ingenuity displayed in arranging the iron frame, so as to break the picture as little as possible, is highly to be commended.

A four-horse power machine which will thresh out forty bushels of wheat per hour. Another is a mill for crushing oats, and grinding barley or malt. The revolving cutters or rollers are of steel, and by an excellent contrivance are kept parallel with each other, or with the plates against which they work. The cutting cylinders, as also the plates, may be set at any distance from each other, as circumstances may require, to grind, or crush fine or coarse, for horses, bullocks, sheep, or pigs, linseed, oats, malt, barley, beans or peas. The third is a rape and linseed-cake crusher, which is made with two sets of working barrels for breaking cake into pieces for cattle or sheep, or powder for manure, the barrels being regulated as required by two pairs of screws.

We give illustrations of two very trifling articles, because they are good specimens of the graceful and artistic treatment of things in common use, a field in which we have a vast deal yet to do. One is a night-lamp, somewhat classically designed, in which a glass globe represents the moon, while the body of the lamp is ornamented with Endymion, typified in the figure of a young shepherd stretched out asleep. The other is a call-bell, in the shape of a flower, surmounted with a handle composed of a half-kneeling fairy, stopping his ears with both hands in agony at the sound of the bell.

An object well worth examination is a handsome frame containing specimens, let in on a velvet ground, of the application of white marble as a material to paint miniatures upon. The whole thing has a very beautiful effect, the marble answers the purpose admirably for which it is used, and Mr. Carrick, the painter, has done himself great credit in the painting of the portraits, which are of Lord John Russell, the Earl of Shaftesbury, Lord Lyndhurst, Major General McLeod, Samuel Rogers, the poet, Thomas Carlyle, Daniel O'Connell, Seigneur Lablache, &c.

Amongst the great variety of elegant carriages exhi-

FIG.1.

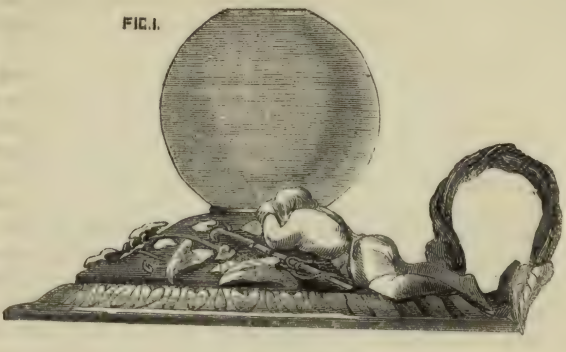

FIG.2.

Fig. 1.—HAND LAMP. *Manufactured by Elkington in Electro-Plate.*

Fig. 2.—HAND BELL. *Manufactured in Silver, by Fox.*


NATIONAL
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Fig. 1.—CHANDELIER. *Executed for Her Majesty's Summer House in Buckingham Palace.*

Fig. 2.—FLOWER VASE. *In Glass and Metal.*

Fig. 3.—FLOWER VASE. *In Glass and Metal.*

bited, is a brougham on an improved plan by Mr. Saunders; it is constructed so as to be used as a double or single carriage, without front and circular glasses. It is very light, the fore-part having only two side springs, with two cranes, one on each side of the body, which is suspended on braces, giving it the easy motion of a chariot. The whole carriage is very highly finished, and is fitted up with a double sofa-back in a very superior manner.

An immense square of plate-glass is exhibited by the Thames Plate-glass Company, 18 feet by 10 feet. The difficulty of producing this immense square was so great, that the workmen broke the three first they attempted to produce.

Among the articles worthy of especial attention, is a beautiful chandelier, of which we give an illustration, designed by Mr. Gardner, for the summer-house, Buckingham-palace. The proportions, unlike most things of this kind, are very agreeable; the parts intended for the candles are composed of vine branches running down into the base, with crouching panthers, introduced to harmonise with the other decorations of the summer-house, as is also the group of young satyrs embellishing the base; the upper part consists of a female figure supporting an urn on her head. It is executed with very great care and taste.

There will be a vast number of objects in the Exhibition far more costly, more splendid, and even more curious, yet none of them, we venture to predict, will be viewed with a keener interest than the contents of the glass orchid house of Mr. Mintorn, not merely on account of the wonderful truthfulness of his most beautiful wax flowers, which can only be distinguished from their originals by the touch or smell, but because the magnificent Victoria Regia is there as the principal subject of the artist's skill in flower sculpture. It is shown in its different phases of floral growth, from the great bristly bud to the luxuriant opening of its pure white petals, and the full-blown flower in its exquisite variation of tint and form, with its pink coronet-shaped centre. Sections

only of two of the eighteen enormous circular leaves which surround the plant at Zion have been introduced, as the immense space they would require could not be spared. This queen of flowers has, upon this occasion, a peculiar and extrinsic claim to attention. It was owing to its discovery on the banks of the Amazons, four years ago, and its introduction into this country, that Mr. Paxton's ingenuity was brought into play in the construction of a glass house of sufficient dimensions for its full development; and it was owing to his successful experiments in the construction of this house at Chatsworth, that he conceived the idea of the Glass Palace of 1851.

There are some specimens of a new process of embroidering and silvering flat surfaces in glass, among which is an exceedingly beautiful girandole, the form and frame of which are both deserving of marked approval. The embroidered border consists of a wreath of fuchsias, forget-me-nots, roses, and blue-bells, surmounted by the royal crown raised on tapestry, and surrounded by ivy. Nothing can exceed the elegant grouping of the flowers, and the truth of drawing and delicate precision with which every detail of petal, leaf, and tendril is brought out in dead and burnished silver. These borders, as mere matters of drawing, are works of art; and we question if Bohemia herself has furnished to the Exhibition anything superior to some of these exquisitely-executed wreaths of Mr. Kidd. This glass engraving is done by means of a lathe and sundry fine-edged wheels, with which these pencil-like touches are worked into the glass. The workman having, with his many wheels and wonderful skill of hand, produced upon the glass the desired pattern, the engraved part is coated with a peculiar preparation, for the purpose of causing the close adhesion of the silver and rendering the silvering more white. The engraving being so prepared, the silvering is then *impressed*, not deposited by any chemical action, upon the engraved pattern, and thus is given an imperishable metallic lustre, throwing out the pattern in bold relief.

Splendid furniture constitutes a very considerable portion of the articles in the Exhibition; it appears in

every variety of material, form, and style of ornaments, and comes from every part of the world, even from our distant colonies. Yet the contributions in this way by Jackson and Graham of London, will bear comparison with anything of the kind exhibited. Among these are a magnificent sideboard of English oak, in the style of the Renaissance; it is 10 feet in length, and 12 feet in height. The pedestals at each end have pilasters of boy figures, beautifully carved, with the attributes of hunting, fishing, Summer, and Autumn; and in the panels of the doors are trophies in high relief, exquisitely carved, of the same subjects. The back is of plate-glass, silvered, the centre being eliptic, and the frame having a female mask with festoons of fruit, finely carved in the entablature, surmounted by a richly-carved shield, with boys on each side as supporters; on each side of the centre are arched divisions ranging with the pedestals, connected with the centre by cornucopiæs of fruit; in each of those divisions is a shelf, supported by elegant carved brackets, the cornice being supported by thermed pilasters, richly carved, with an elegantly-formed vase placed at each extremity over it. A dwarf bookcase, in fine Italian walnut-tree, in the same style, but less elaborately carved, the top being arranged for the reception of bronzes and articles of *virtu*. A library sofa, of a luxurious form, the ends being supported by two thermed female figures, finely carved in walnut-tree: and a dining-room chair, with a high back, upon the top of which is a shield, with fawns in a reclining position as supporters, covered in rich velvet, and ornamented with fringe round the seat.

They also contribute a number of superb carpets of their own manufacture. One is in the style of Louis XV. called by them London-Tournay, from its being manufactured in the same way as at Tournay and the Gobelins in Paris. It is about 30 feet by 20 feet in size, and the design is remarkably bold, the centre ground being white with a beautiful group of flowers; upon the ground, which is of a ruby colour, is an arabesque scroll ornament. The border is on white ground, with palm-leaves and festoons

of flowers. In each corner is a shield with scrolls and cornucopiæs of fruit and festoons of flowers. There is in this carpet more than three millions of ties, all put in by hand.

There are several smaller carpets of this kind, and of velvet pile, which are extremely beautiful and highly creditable to their producers. There are likewise some beautiful Tournay rugs, one of which, with a centre group of dogs, a dead stag, ducks, &c., is, perhaps, as fine as this kind of work has ever been made, having near fifteen thousands ties to the square foot; the other displays as its centre the Victoria Regina lily.

Among the innumerable models exhibited is one of the *Great Britain* steam-ship, as she lay on the strand at Dundrum Bay, with all the ingenious apparatus and lever power by which she was removed and sent afloat. The vessel, boats, &c., are made of tin, neatly executed and painted, and are set out with the chains, boxes, &c., used on the occasion.

A richly-embroidered and tapestry-worked state bed and hangings, including almost every description of ornamental needlework, is exhibited by Messrs. Faudel and Phillips. In viewing the bed from the foot, the nearest subject is the celebrated "Aurora" of Guido, in the Rospighoso Palace at Rome. This foot-board has been transferred to the canvass directly from the picture without any portion being made into a Berlin pattern, set in a square design, or any other mechanical contrivance for simplifying or facilitating canvass work. It is in "tent-stitch," on fine canvass. All the wool has been split, and to obtain many of the tints it has been found necessary to twist two single threads of different colours into one, 700 shades having been used. The number of stitches is estimated at upwards of 1,600,000. The tester, or head-piece, is worked in cross-stitch, Gobelin-stitch, and raised-stitch, in wool, afterwards sheared, silk twist, and chenille. The centre is copied from Thorwalsden's "Night," direct from a model, without the intervention of a squared design, and it is stated by the firm that this is the only attempt to use

statuary and other fine arts as patterns for needlework. The *bas relievo* is suspended from a wreath of flowers, selected from all nations, tied together by laurels, palms, and myrtles, emblematical of peace. The fruits and bread-stuffs of the world united are in raised work at the sides, and copied from Raffael's ornaments in the Loggie of the Vatican, but grouped so as to be appropriate to the present subject. The scroll is of the same character as the bedstead, and into the whole of the design no less than fifty-one different flowers, fruits, and products are introduced. The upper hangings are entirely in silk chenille, manufactured in Spitalfields, representing, on a flat surface, the folds of velvet draperies, supported by worked cords and a garland of poppies, emblematical of sleep. The ceiling and cornices have been designed by M. Briteaux. The subject is Angels watching and holding wreaths of roses over the sleepers. The curtains are of white watered Irish poplin, with blue satin strips worked in silk crotchet-cord made purposely; the design so arranged as not to show any joint. The dimensions of each curtain is 12 feet by 9 feet. The cover, or counterpane, is a junction, as it were, of all the parts. The sides are made to correspond with the hangings and the tester. The pillows and bolster are in gymph, which, together with the fringes, are made in the manufactory of Messrs. Faudel and Phillips. The canvass and every other material used are of British manufacture. The whole has been designed, arranged, and worked under the superintendence of the exhibitors, in their own workroom upon the premises. Thirty hands have been employed on the needlework alone during a period of eight months. The bedstead itself is carved and richly gilt in the style of Louis Quatorze, and is, independent of the tapestry, a most beautiful specimen of fine art applied to furniture.

In the west-end of the galleries, and directly facing the great central avenue, is erected an organ, of extraordinary dimensions, and of great power. It has been constructed by Mr. Willis, of Manchester-street, Battlebridge, and weighs more than 30 tons. It rests upon the ordinary supports of the gallery, extending over

little more than one of the 24 feet bays, and offers an unanswerable refutation of the groundless doubts and fears in which some persons have indulged respecting the stability of these portions of the building.

There is exhibited a very beautiful embroidered design in gold, for a communion cloth, embracing some new and novel features in the art. It is enclosed in a case, with all the materials used in embroidery; the numerous threads, wires, &c., being shown in all their stages of manufacture. The embroidery representing the complete and last stage.

Two ladies have contributed to the Exhibition a magnificent and gigantic piece of Berlin needlework, which covers nearly 3,000 superficial inches of space, and has in its fabrication, occupied them ten months. It represents Abraham offering up his son Isaac upon the altar, with an angel appearing in the clouds, with distant landscape and scenery. The frame of this piece of needlework is adorned with carving; the inner border represents the shamrock, rose, and thistle; the outer border convolvulus flowers and leaves; on the side of the frame are palm and olive-trees, with Mount Moriah in the distance, by Mr. Shakell.

There are few things in the Great Exhibition more worthy of examination than the model of the Great Victoria Pyramid, designed for the centre of the British Metropolitan Necropolis, proposed to be erected on Woking-common, Surrey. It was proposed by Mr. Willson to erect this pyramid to an elevation of 900 feet, being 100 feet higher than the great pyramid of Egypt, and to form within it catacombs capable of holding 5,000,000 bodies. It was suggested to be built of brickwork, faced with granite, "presenting an elegant and majestic outline, arranging in the most compact manner a multitude of subjects in numerical order, within a given area of 18 acres, easy of access to every catacomb, free from atmospheric humidity, sacred from profanation, and secure as art can make it against the ravages of time," an "impressive *memento mori* to every passing age, and an object of pious veneration to posterity." It was proposed that the approach should be through a lofty Egyp-

tian portal. Within this entrance there were to be two plain chapels, and a register office opposite, to correspond; also four neat dwellings, for the keeper, the clerk, the sexton, and the superintendent. There were to be four central entrances, or avenues—east, west, north, and south—intersecting each other in the middle of the edifice. From the base to the summit there was to be constructed a central shaft for the purpose of ventilation, and carrying off any gas that might escape, through the means of tubular drains, constructed under the floors of the central avenues, and communicating with every catacomb. Round the exterior of this shaft it was projected that there should be an inclined plane for ascending and descending to the lantern or obelisk at the top, which might serve for making astronomical and other observations. Zigzag plains, from each entrance, for the purpose of ascent and descent, were also contemplated to be made. It was intended that the Pyramid should contain, vertically, 94 stages of catacombs, including those underground, making each stage a distinct cemetery, containing altogether 215,296 vaults. There were to be provided ample means for ventilation and lighting, so that the interior would be visible to the visitor, and might be visited with perfect safety, whilst at the mouth of each vault or catacomb mural slabs and monumental inscriptions might be placed, recording, as now, names, ages, dates, and other particulars. There were, of course, to be almost innumerable cross passages, which will be easily understood by an inspection of the model. Efficient means were to be provided for drainage, for the raising of the materials, and for the accommodation of the workmen, who would conduct all their operations with great facility and perfect safety. In the enclosure surrounding the base of the Pyramid (which we ought to have stated was to be a square, each side measuring 900 feet), and which was proposed to be from 100 to 200 acres in extent, ample accommodation was likewise to be provided for the ancient mode of burial, an adequate area being tastefully laid out for the reception of cenotaphs and monuments, or other sculptured tombs, of eminent indi-

viduals, who might prefer interment separate from the multitude, or whose virtues might merit such honourable distinction.

A new lady's saddle has been made by Mr. T. Oakley, of Maidstone, for the Great Exhibition. The seat, front of the near head, and of the leaping-head, and the safe are inlaid with very beautifully embroidered flower-work on white cloth, which gives the saddle a very tasteful and elegant appearance. It is not unlikely that this hint may be extensively followed, and that young ladies may furnish embroidery for their own saddles. Mr. Oakley has introduced an improvement in construction, by dispensing with the off-head or horn, the original object of which is effected by the leaping-head, and the alteration gives the saddle a very light and improved appearance.

Mr. Robert Stephenson exhibits two of his locomotives, with all the most recent improvements; and Mr. Fairburn, of Manchester, three very beautiful engines. There is also exhibited the actual hydraulic press used in raising the Britannia Bridge over the Menai Straits.

The leisure amusement for eleven years past of Mr. James Pitt, dancing-master, Quay-street, Manchester, has been the painting of an oil cloth, which he has presented to the masonic lodge over which he presides. The floor-cloth is 16 feet by 10 feet; its centre is covered by the representation of the sun, white in the centre, diverging into lemon and orange coloured rays; it is formed of seven centres or stars, each of sixteen points, and by its bright hue gives great effect to the chequered squares and circles around it. There are twenty-two large squares set diamond-wise, forming the outer border, and as many triangles to complete the border; and within these 156 smaller squares, filled by circles, each circle having its peculiar pattern, and being adorned by sixteen smaller stars. In one of these larger squares, only 16 inches square, there are no less than 7540 diamonds, diminishing as they approach the centre, till they become like minute points. The work has been valued at 500 guineas.

Mr. Grundy, of Manchester, exhibits some exquisitely beautiful frames for prints and drawings. Although

neither drawings nor engravings are admitted to the Exhibition, Mr. Grundy has obtained special permission to fill his frames with one or the other, without which the style of frame could not be duly illustrative, especially as it is made to take its character from the pictorial subject which it surrounds. In drawings he is obliged to transgress a little, but only to the extent permitted. For instance, one light frame encloses a sheet of seven small studies of the late Sir Augustus Callcott, which are, as it were, inlaid or sunk in the *matte* or mounting, so as to preserve them from injury, as the glass cannot touch them. This frame has at the lower corners a perforated ornamental inner border, extending over the glass itself, consisting of the entwined foliage of the oak and ivy, as emblematical of the honour due to the deceased artist. At the top corners, the ornamentation does not fall inwards over the glass, but outwards, and consists of the stems, leaves, and flowers of the convolvulus and the anemone. A somewhat plainer and heavier style, but still very light when compared with contemporaneous frames elsewhere, has been designed for such drawings as those of Cattermole, Nash, &c., or for prints from the old masters. Landseer's well-known circular print of the Queen nursing, which is spoiled by a square frame, is here in one neither square nor octagon, but approaching the latter, or what the former would be if the corners were rounded off in a large radius. Another frame is adapted to Sir C. E. Eastlake's picture of "Christ Weeping over Jerusalem," which is elliptic in form, having an arched top. The centre of the top and base of the frame have appropriate emblems: the dove at the top; at the base, the cross, the seven seals, &c. Then a pair of frames for Sir E. Landseer's "Peace" and "War," are alike in general form and style, but different in embellishment; both being emblematic. "War" has at the top martial trophies, spears, flags, swords, cannon, &c., surmounted by an oaken wreath. At the sides are other trophies,—shields, helmets, breast-plates, and other defensive armour. The corners are filled with oak and ivy; and the centre base with the wreath-like palm-branches. "Peace" has

at the centre-top the cornucopiæ filled with fruit, wheat-ears, &c.; and the banners of war are furled. At the sides are grouped agricultural instruments, and the armour wreathed with flowers. At the corners the convolvulus and other flowers, and at the base palm-branches. Then the circular engraving of Raffaelle's "Madonna del Seggiolo, or Sedia," has a light, chaste frame, surmounted with the stem, leaves, and flowers of the lily, emblem of purity; and other appropriate decorations at the base; and as both these project over the line of frame, the effect is to elongate the circle, and to take away the monotonous effect of a ring-like frame. Another upright frame has festoons of foliage and flowers "cut through" at top and base. A very faint and delicate sketch study by Maclise, being a portrait of the late Countess of Blessington, in morning costume, is framed. Another frame exhibits an adaptation of two drawings, by different masters, to the same tableau; the upper one being an arched square, the lower an oval, encircled by a wreath, hanging over the line of frame, inwards and outwards.

Mr. Dyne has invented a life-boat formed of diagonal battens, laid similar to that of lattice-work, and its outer sheathing is formed of gutta-percha; its buoyancy is 350 cubic feet of air, capable of sustaining upwards of 9½ tons. It has in its bottom 3,600 holes, half an inch in diameter, to allow all water shipped to pass off; it has a convexed bottom 30 feet long, 2 feet wide, and 18 inches deep, in which are placed three perforated fins, for the purpose of steadying and keeping the boat in an upright position, acting when the boat lurches from either beam similarly to a paddle-wheel, a reaction taking place through the perforated parts, which will be seen to multiply its weight of water to four times its amount. In this convexed part, and between the fins, is contained two tons weight of water, which must be displaced therefrom before the boat can turn over, but such will be almost impossible, it being more than half the weight of the boat; but, as a provision against such a lamentable disaster, she turns over on her quarter 16 cwt. of water, which rights

her again. It may be remarked, that the two tons and 16 cwt. of water referred to is not one ounce weight to the boat when in her upright position. At the stem and stern, and on each beam and quarter, is run a bow, to which is connected galvanised springs, which will not corrode, and will be found of the greatest utility in the event of collision, which act similar to that of railway buffers, from drowning, or to enable a stranded vessel to communicate with the shore. It is intended to be placed at the stern of the ship, so that on an alarm being given "A man overboard!" the person at the helm can dislodge it instantly, and as it falls into the sea a fuzee becomes ignited, which burns with a brilliant light, guiding the sinking man to it; should it occur at night, four uprights are placed upon it, containing rockets, blue and other lights. Also, an emigration life-boat, intended for a first-class vessel, of the following dimensions: 20 feet long by 14 feet wide; it is united by strong bolts, and is very portable, from the mode of its construction, which allows it to be folded up in the compass of 20 feet long by 2 feet 6 inches wide. On occasion of shipwreck it is capable of supporting 100 persons, with provisions for seven days, allowing for each individual two and a-half pounds of food and one pint of water per day; in addition to which, it may be made available for a portion of the cargo, and can be put in requisition in a few minutes.

No one who considers the immense importance of our cotton manufactures can fail to be highly interested with a history of the rise and progress of calico printing, in the form of a panorama, sent from the Manchester School of Design. It is surmounted by a flat gold frame-work, 4 feet 6 inches by 5 feet 6 inches, and 1 foot of surface, arabesque tracings in oil colour, surrounding eight vignettes, painted upon panels. The lower centre one, 2 feet wide by 6½ inches deep, represents Manchester in 1750; the upper centre Manchester in 1851. The left lower corner, and the corresponding upper one, contain views on the river Irwell at the same periods. Each of these show distinct marks of the progress of smoke and steam; the advance of population

and industry upon solitude and sunlit foliage. In the corresponding corners of the right we find the birth-place of Sir Robert Peel, Chamber Hall, one of the first Lancashire print-works, in its past and present appearance. The centre of the side portion of the frame-work, contains octagonal panels, with views of Fennel-street and Mosley-street in 1750 and 1851. The arabesque figures represent Genii gathering cotton from the pods, and in the graceful arrangement of which the ornament is partly composed. In another portion we discover a boy and girl engaged in operations connected with the process of calico-printing. Through the frame-work is seen a revolving surface 400 or 500 feet in length, upon which are placed a vast quantity of designs, upwards of 12,000 in number, specimens of the various styles of prints produced during the last hundred years. These patterns are from $3\frac{1}{4}$ to $2\frac{1}{4}$ inches, to 8 inches by 4 inches, according to the character of the design, and are arranged to show its gradual progress, as well as in reference to the derivation of the ornament. On the left, for instance, we have those derived from pure geometric forms; in the centre those derived from the imagination of the artist, or from the effects of natural phenomena, fossil remains, and other miscellaneous objects; whilst the right exhibits such as are taken from floral forms.

A Manchester warehousemen exhibits a pound of spun cotton of the finest description, in length two hundred and thirty-eight miles one thousand one hundred and twenty yards. The cotton was imported from Egypt.

Few things in the Exhibition will be viewed with more interest, than the fine specimens and groups of preserved birds, &c., from Newcastle, most admirably executed by that eminent naturalist, Mr John Hancock. Three of these are classed together as illustrations of falconry. The first of these is the ger-falcon, hooded, and perched on the gloved hand, as carried to the field. The second represents the struggle between the same bird and its quarry. The heron, just struck down, lies quivering with pain, as the talons of its foe pierce its flesh; its wings are outstretched, and it appears to be

vainly endeavouring to shake off its assailant, towards whom its head is turned, as if seeking an opportunity to strike him with its long sharp bill. The falcon, with extended wings, holds his prey with such a gripe as obviously will not relax, while, with head half-turned, he is keenly watching its movements, ready to meet an attack, and apparently preventing it by the terrors of his glance. The whole is so life-like that it would not be difficult to imagine that the contest is really going on as the spectator beholds it. The third is the same bird sitting gorged after his repast, with the bones and feathers at his feet, as if just ready to sink to sleep, yet with one eye opened wide in apprehension of danger. Next is a specimen of that formidable alpine eagle the lammer geyer, or lamb-killer, perched upon a rock. Black grouse and ptarmigan, a brace of each, are thrown together, as they would lie, when just killed. A dead plover lies in an exceedingly natural position. The same may be said of a dead gull, over which hovers its companion, who appears to have just discovered it, and to be lamenting its fate. A leopard reposing and two leopard cubs sleeping, are both executed in a superior manner. Mr. Hancock's "scene in the tropics" would have filled Audubon himself with delight. The natural productions represented are those of the primeval forests which skirt the banks of the mighty South American river Amazon; and those who have read the descriptions of Waterton and other travellers might well imagine, for the moment, that they saw before them, as it were through some narrow opening, a small portion of the scenery which they have so vividly depicted. Above the mass of decaying vegetable matter which the rank luxuriance of tropical vegetation is continually augmenting, appear gnarled trunks and twisted roots, about which various parasitical plants have entwined themselves. Above these rises the air-plant, over which are hovering the scarlet, and yellow, and the blue, and buff macaw; while amidst the flowers and fruit of the banana, are perched several small parrots playing with each other, or watching the doings of the insect tribes beneath. In one place two rhinoceros-beetles are engaged

in deadly conflict; while from his haunt amidst the tangled roots, the terrible tarantula-spider has rushed out and seized an unsuspecting butterfly. Beetles and other insects, in their coats of emerald, of jet or burnished gold, are running in various directions amidst the undergrowth.

A swarm of bees embalmed by Mr. Crossling, of Felton, is quite a curiosity. It is stated that their number is no less than 10,000, and that each one passed through his hands six times.

We have also from Newcastle specimens to illustrate Mr. Pattinson's process for the separation of silver from lead, discovered in 1829. When lead containing silver is fused, and suffered to cool very slowly, with constant stirring, at a certain temperature, near the melting point of lead, small solid particles or crystals of lead are formed, which being heavier than the still fluid lead, sink to the bottom of the pot, and on being removed, are found to contain much less silver than the original lead, the still fluid lead from which they are taken, being rendered proportionally richer in silver. By repeating this crystallizing process several times, the crystals become poorer and poorer, until they contain but a mere trace of silver, while the liquid lead on the other hand becomes exceedingly rich, so that a large plate of silver is obtained by submitting but a small quantity of this rich lead to cupellation. The specimens consist of original lead, containing about 10 oz. of silver per ton; crystallized lead, containing 5 oz. of silver; crystallized lead, from the first process, containing $2\frac{1}{2}$ oz. of silver; crystallized lead, from the second process, containing $1\frac{1}{4}$ oz. of silver; crystallized lead, from the third process, containing about half an ounce of silver per ton, sent to market as separated lead, being much improved in quality by these operations. There are also specimens of slabs of lead, to show the form of the crystal of rich lead, containing about 20 oz. 40 oz. 80 oz. 100 oz. 200 oz. and 300 oz. of silver per ton respectively, and of silver, obtained by submitting this latter rich lead to cupellation.

Mr. Thomas Martin, of Newton-Abbot, exhibits some specimens in tornography, or a new process of engraving inscriptions on brass seals, by machinery, of which he is the inventor.

From Northwich is exhibited a splendid specimen of rock salt, the product of Platt's Hill Mine, at Wincham. It is octagonal in shape, weighs about two tons, and is six and a half feet high, by two feet four inches in diameter. The surface has been highly polished, and presents a most beautiful appearance.

Norwich, with the most laudable pride of her excellence in the manufacture of shawls, also exhibits some extremely rich and beautiful specimens, for which the makers boldly challenge comparison with the shawls even of India.

From Nottingham, there is a most elaborate piece of carving, by a workman; the subject taken from "Othello," act i. scene 3, from a painting by Mr. J. Gilbert.

From the Hartford Works, Oldham, there is exhibited a most important and complete set of machinery for cleaning, carding, spinning, and weaving cotton, all finished in the highest style of workmanship. It consists of an improved patent opening and cotton-cleaning machine, in which all fibre cleaned in it is passed between cylinders so constructed, that motes, seeds, &c., are thrown down beneath it, making the operation of cleaning exceedingly simple and cheap, the power required for cleaning three thousand pounds per day being from one to one and a half horse, according to the state of the material. Single scutcher and lap-machine, in which the patent consolidating calender-rollers perform the felting of the cotton in a superior manner, and so compress its bulk as to admit an increase of forty per cent. on the lap-roller, by which a considerable saving of labour is effected at the carding-engines. Breaker carding-engines: the novelty of these machines consists in the method of feeding the card by means of a dish, straight edge, and large roller; in the cylinders, doffers, rollers, and strippers, being made of iron; and in the method of adjustment of the bearers or carriers for the rollers and strippers, while the method of applying the bearings, &c., for carrying the rollers is so simple as to be capable of the finest adjustment. Lap-machine, in which the patent consolidating-calenders are also applied to this machine with the same advantage as in the scutcher. Finishing carding-engines:

the laps made in the last machine are taken in by this, and the fibres are again drawn, combed, and so completely straightened, as to insure a more perfect evenness in the web, which is then delivered and coiled into cans. These machines are supplied with the same improvements as the breaker carding-engines. Grinding-machine, used for grinding and sharpening the teeth of the cards on the roller and flats of the carding-engines. Drawing-machine, furnished with a series of self-acting guides, which stop the machine whenever the stiver breaks in passing from the can to the roller; it is also fitted up with coilers and revolving motions to the cans. Stubbing-machine of twenty-eight spindles, used for drawing the stivers prepared by the last machine, and afterwards twisting and winding them in bobbins. Second-stubbing, or intermediate machine, of fifty-four spindles, used for doubling and drawing the stubbers, and twisting and winding them on bobbins for the crulls of the roving-machines. Roving-machine of 120 spindles, the improvements in which consist in the self-acting motion of stopping the machine when the stiver breaks, in the patent bearings or collars in which the spindles work, and the method of fitting the flyers on the tops of the spindles, whereby a greatly increased speed is obtained, and in the application of the double patent presser to the flyers, which preserves the equilibrium of the spindles whilst working, whether the bobbin be full or otherwise: weft and twist self-acting mules of 402 and 348 spindles, used for drawing or elongating the fibres and twisting and winding the yarn.

Otley has manufactured a wrought-iron safe for the World's Exhibition. One is amazed with its secret springs and complicated mechanism. The lock on the lid of the outer case has fourteen shoots, or bolts, which, by a single turn of the key, fly out instantaneously on all sides of the cover. The safe has to be raised out of the case by a crank, when a beautiful nest of five drawers, and a writing-desk, make their appearance. The weight of the safe is about six cwt., and the whole is finished in an exquisite manner.

Mr. Anderson, sculptor, of Perth, exhibits a group of figures, illustrative of Scottish games. The principal figure, which stands upon an oblong pedestal, represents an athleta in the act of throwing the putting-stone; and the other figures are executed in bas-relief upon the sides of the pedestal. On one side are represented four Highlanders, dancing the reel of Tullochgorum, with a piper at the one extremity of the group, and the chief leaning upon his sword at the other, while the opposite side exhibits other three Highlanders, with flowing robes, striving in a foot-race. The one end has the representation of one clansman throwing the hammer, and the opposite that of another tossing the kabar. The group is executed in plaster of Paris, and is intended to be painted over, so as to protect the figures from dust or other injuries.

Among other objects which will no doubt attract great attention, is a model of Plymouth Breakwater, executed with surprising fidelity, and containing, among other things, the representation of a brig, two inches long—the complete epitome of a vessel-of-war.

From Saffron Walden, there is a curious cabinet, hexagonal in form, showing a frontage from any point, formed by an intersection of ovals both convex and concave. It is of a temple-like appearance, surmounted by a dome, and the divisions of the six fronts are formed by columns and pilasters. Three of these faces or divisions are with open drawers, and three enclosed with inlaid doors; the outsides of these doors have a sunk panel, and an inlaid ivory raised panel. It has 27 drawers of walnut-tree, with antique pendent solid silver handles, and the exterior is of ebony and ivory. The outlay in its manufacture will be from £40 to £50.

To most of the visitors to the Exhibition, especially to the inhabitants of the metropolis and to the crowds of foreigners, a most attractive model is furnished by Mr. Tyson, of Selby. It displays an English farm-yard, constructed on a scale of 2 feet to an inch, and covering an area of 100 square feet. On the north side are situated the most lofty buildings, in the centre of which stands the barn, containing a steam-engine,

threshing-machine, chaff-cutter, and a pair of millstones for grinding corn for the cattle. Behind the barn is a lofty shed, sufficiently capacious to contain a large corn-stack, which is brought in at once by a truck on a tramway from the stack-yard in the rear of the buildings. At the west end of the barn is the granary, under which are the cart-sheds; and at the east end are the piggeries, surmounted by the fowl-house. West of the area, stands the stable for the draught horses, behind which is a shed for agricultural implements. The wheelwrights' and smiths' shops form the angle in the south front. Symmetrical with the stables, on the east, are the cow-houses, cattle-sheds, infirmary, and office for the farming bailiff. The south front is occupied by the hackney-stable, coach-house, and loose boxes; and, in the centre, the turnip and root-house, over which is a dovecot, surmounted with a vane and the four cardinal points of the compass. Across the centre of the area, running north and south from the root-house towards the barn, we have the sheds for fattening beasts, which are arranged in parallel lines, head to head, with a tramway between them for the more expeditiously supplying them with food. Between the barn and the fattening-house is the steaming-house, where all the food for the cattle, pigs, &c., is cooked by steam, from the boiler of the engine, whence it is taken by tramway to the place where it is required. Above the steaming-house there is a large tank for the supply of water to the cattle-troughs by means of pipes and taps. The tank is replenished by the steam-engine from a reservoir, into which is conveyed, by means of spouting, all the rain-water which falls from the buildings.

Messrs. Naylor, Vickers, and Co., of Sheffield, have prepared for the Exhibition a very exact working model of the premises and machinery used in the converting, melting, rolling, tilting, and forging of steel. First, the converting-furnace is shown in its external form and in section. Next comes the interior of the melting-furnace, with a section, all the pots and implements used being made complete according to the size of the model. We have next the furnace for heating the steel, preparatory to

rolling. Then all the apparatus of the rolling-mill, with rollers in all varieties of size and form. And lastly, the furnaces for heating the steel for tilting and forging, with forge and tilt hammers. This model is accompanied by specimens of the metal in various stages.

From Sheffield, Hiram Younge, Bailey-lane Works, exhibits a file. The immensity of its size is not more striking than the elaboration and minuteness of the workmanship. The length is 54 inches, breadth 3¼ inches, thickness three-quarters of an inch, weight 28 lbs. With some small exceptions, the whole surface is covered with ornamental designs, all cut by hand, with hammer and chisel, in a style which, for artistic beauty, is truly astonishing. The tangs are sunk by filing, and are ornamented, on one side, with the national arms, and the words "God save the Queen," on a shield; a front view of the Cutlers'-hall on the other, with the motto, "Pour parvenir à Bonne foy." The other tang represents Atlas bearing the globe, with two lions couchant: beneath are the Sheffield arms, and a cornucopia on each side. On the reverse side appear the cutlers' arms, with the emblems of industry—beehives and bees on the wing—on each side. On the moulding these words appear: "Cut, designed, and executed by Hiram Younge, a member of the Sheffield file-trade." The centre or body of the file is ornamented on one side with an accurate, full-length view of the Great Palace of Industry, in perspective, forming an elegant and spirited sketch. The reverse side is occupied by a beautiful view of that imposing structure, the Sheffield Infirmary; while on the ends, between the centre and the tangs, are four views, illustrating the processes of file-manufacturing.—William Oliver furnishes a case of miniature cutlery. In the front part of the case, secured from the action of the atmosphere by a glass covering, there are forty pieces of cutlery knives and forks, and spring-knives, made from the solid, and ivory-hafted. The smallest pair is under three-eighths of an inch over all (from the extreme of the haft to the point of the blade), and can be put into the tube of an ordinary tobacco-pipe. The sizes increase gradually up to four inches over all.

All these have been made by Mr. Oliver, some of them twenty years back, and have cost an immense amount of labour. In the same compartment are a knife and fork of the old Yorkshire round-point style, five inches over all. On the right-hand side of the miniature case is a specimen of the knives and forks manufactured 100 years ago—a green ivory china-headed round-point knife, and spoon-shank fork. On the left-hand side is a specimen of table-cutlery manufactured fifty years ago—the knife round point, and fork straight prong, turned bolsters, and silver pistol-hafted. The top part of the case is occupied by some specimens of carving-knives in the newest design. The first is a set of game-carvers, knife, fork, and steel, in fawn's feet, mounted and shod in silver. The fork is a diamond-cut shank, and scope prongs. In the centre of the blade, in gold letters, surrounded by a scroll, is the word "Game," designed and executed by Mr. Skinner, on his new method. Above those is a pair of venison-carvers, set in elephants' tusks, the smallest ever known to have been imported into Sheffield. The tusks are respectively eight, nine, and ten inches in length. The blade of the carver is sixteen inches in length, and Jones' patent. In the centre of the blade, in gold letters, is the word "Venison," enclosed in scroll-work, also executed by Mr. Skinner. In all there are fifty pieces of cutlery, enclosed in a mahogany case.

From Sheffield, there is also a display of scissors in a glass case, 4 feet 6 inches by 5 feet 6 inches, with a carved oak frame, containing 230 pairs of scissors of every size and pattern, grouped and mounted upon a white ground. The centre object is a pair of huge scissors, 22 inches long, the bows and shank representing in outline two crowns, the upper one surmounted by a thistle. All the ornamental work is wrought with the file, some portions of the surface being chased. This object is by far the most expensive pair of scissors ever produced in Sheffield. On each side of these appears another pair, nearly the same size and scarcely less beautiful or costly. One pair represents, in chasing, the bruising of the serpent's head; in the centre is wrought out with the file the Prince of Wales's feathers, and the bow is constituted of the emblematic group of

the shamrock, rose, and thistle, and some curious scroll-work, all wrought out with the file. The other lateral pair of scissors are likewise beautifully chased. The department conveying the greatest amount of instruction to the general spectator is in the left-hand lower corner. It illustrates the process of the scissors' manufacture in ten distinct stages: 1. a plain piece of steel; 2. the mood, after the first process of forging; 3. the forging complete; 4. filed; 5. bored and sharpened; 6. ground; 7. bow got up; 8. fitted; 9. glazed; 10. a finished pair of ordinary barber's scissors. Over these objects there are specimens of print, woman's, shaping, drapers', and nail scissors, all glazed; a pair of dandy's whisker scissors, with a comb fabricated at one side; a variety of lamp scissors, vines, flower-gatherers, pruning and slide pruning shears, and horse-trimmers, all with very long stems; massive tailors' shears and American ditto. The right-hand side of the case is headed with specimens of fancy shaping and bankers' paper scissors, hair and nail scissors, and a great variety for gentlemen's dressing-cases. In the centre of this side the most striking object is a pair of 16-inch fancy nail scissors, ornamented with etching; these, as their immense size suggests, are designed only for show. Beneath them is a group of surgeons' scissors, carved, angular, and distorted into every imaginable shape for difficult operations; their very appearance being sufficient to create a shudder. Included in the foregoing are all the ordinary and most useful varieties.

George Richardson and J. Turner, two ingenious members of the filesmiths' union, have fabricated for the Great Exhibition a set of miniature files, that are a great curiosity. The whole set, two dozen, are mounted on satin and enclosed in a neat leather case, little larger than a miniature portrait-case. So small are they, that, the whole twenty-four weigh less than a fourpenny-piece. They form part of the magnificent display of files exhibited by the Sheffield Filesmiths' Committee. Sheffield likewise furnishes a tea-kettle manufactured out of a fourpenny-piece.

Amongst the interminable variety of things challenging

our attention in the Exhibition, is a beautiful column of coal, from Mrs. Clarke's colliery, at Silkstone. It is seven feet in height, and on the apex there is a miniature corve, highly polished, with brass wheels, in which is a complete set of miner's tools, and suspended from the top is a blue and white silk banner, with the inscription, "Old Silkstone Colliery."

Among the exhibitors at the grand Industrial Exhibition, is Mr. James Sharp, of Southampton. Twenty-five years ago he invented a gas-cooking apparatus. By it a dinner could be cooked with the utmost perfection and accuracy, without requiring much attention, or increasing the temperature of the apartment in which it was placed. Prejudice, however, against introducing science into cookery, and the refusal of gas companies to furnish supplies of gas by day, prevented the adoption of the apparatus, and the manufacturing speculation failed. When M. Soyer (who cooked an ox by gas in Exeter last summer) was at Southampton a short time since, he visited Mr. Sharp, and spoke of the unscientific construc- of the gas-cooking apparatus now getting into use. Mr. Sharp now exhibits a gas-cooking apparatus of superior construction. Within four feet square is an apparatus which will cook a dinner for 100 persons, with two shillings worth of gas at its present price.

John Swift, of Stockport, exhibits a steam-engine, made upon the high-pressure principle, similar to those generally used in steam-boats, having an upright shaft, cylinder, and piston-rod, the stroke of which is about three-eighths of an inch. The fly-wheel is rather larger than a common farthing; the rim is of brass, and the spokes, or cross parts, of steel. The entire engine, when detached from the steam-box, does not measure more than an inch and a half in length. The boiler contains about one-third of a pint of water, and will work the engine about two hours before it requires replenishing.

From Stourbridge, we have two transparent ornamental table clocks; the works of which are a combination of glass and brass. One of these timepieces is worked by a newly-invented propeller, by which, a timepiece can be kept in motion for the period of fifteen months, and is

constructed to act for the space of three months. The other is a skeleton spring clock, the largest probably ever manufactured, and constructed to go for eight days.

A lady, residing at Strabane, has sent to the Exhibition a knitted linen lace scarf, containing 12¼ miles of thread, and 3,475,000 stitches. It is 9 feet 10 inches in length, and 3 feet wide, and is only 5¾ ounces in weight.

Suffolk exhibits some improved agricultural implements, of which we give cuts. One is a threshing-machine and straw-shaker, being made portable, with an arrangement which permits the shifting of the connecting bar, so that it may be worked on either side of the stack or barn. The requisite speed of the drum is gained by three motions, or pairs of wheels, instead of two only, as was formerly the case, and this alteration, combined with the general improvements throughout the machine, has considerably added to its ease in working, and lessened the wear and tear. The shaker is for the purpose of thoroughly separating from the straw, all corn, leaf, clover, &c., that may be amongst it, and for carrying off the straw after it has passed out of the machine, without any loose kernels amongst it, producing a valuable increase of calder for feeding stock; which is otherwise lost for that purpose. The screen is adapted for riddling all loose ears, leaf, and short straws, and separating it from the corn and chaff, while the winnowing-machine will so far dress it, that once passing it through an ordinary dressing-machine will render it fit for the market.

Sunderland sends us illustrations of glass manufacture, commencing with a model of a glass-making-house, and extending to a great variety of articles of glass manufacture, in successive stages, and a window of painted and stained glass, illustrating the four seasons.

Taunton exhibits a cabinet made of fine walnut-wood, grown in the neighbourhood, elaborately carved, representing Youth, Manhood, Maturity, and Old Age; also the seasons of the year, in carving and needlework, the Passions, &c., crowned with a figure of Peace extending over the globe.

Ulster contributes some pearls found at Omah, some of

which are remarkable for their size and purity, and may vie with pearls found in any part of the world.

From Wareham, is exhibited a model of a 12-gun brig, and specimens of stone, marble, clay, straw, and buttons.

From Warwick there is exhibited the Kenilworth oak buffet. The central panel represents the triumphal entrance of Queen Elizabeth into Kenilworth Castle, in 1575. The meeting of the Queen and Amy Robsart is shown on the right (or dexter) door panel, and the other one represents the interview of the Queen with the Earl of Leicester, when the earl declared his marriage with Amy Robsart; the corner figures exhibit the four grand distinctive characteristics of the age, viz. poetry, history, and the defenders of our country, both by sea and land (represented by Shakspeare and Sir Walter Raleigh, Sir Francis Drake, and Sir Philip Sydney).

Mr. M'Crackan, of Warwick, exhibits a new mechanical propelling-engine, of six to eight-horse power, to supersede steam-power, whether stationary, locomotive, or marine, and also to supersede horse-power on common turnpike roads. It requires neither coal, air, nor any chemical compound to give the power; has neither funnel, boiler, condenser, tank, nor tender, and appears very unlike any machine hitherto invented.

Waterford exhibits an *épergne* of most massive dimensions, embellished with the most exquisite cuttings. On the top rests the figure of the crown.

Among the innumerable models exhibited, one of the most interesting is that of Wavertree, which is less than 18 inches square, yet it gives, in exact proportions, the Church, Wavertree-hall, and about three hundred figures, farm-houses, out-offices, omnibusses, coaches, carts, &c. The figures, minute as they are, are all likenesses. The gardens are all in bloom; the ladies coquette down the walks with their parasols; coaches pass with elegantly dressed females in them; the fish-women bear stock upon their heads; the omnibus-drivers seem to crack their whips at the yelping dogs below; and, in order that there may be no mistake, every omnibus and cart bears its appropriate title, &c. One man is seen currying a restive

horse; another ascends a ladder, paint-pot in hand; while a footman holds a tray for the reception of a visitor's card.

From Wells we have a *fac-simile*, in pollard oak, of a chair which formerly belonged to the celebrated Abbot Whyting, of Glastonbury Abbey, and in which tradition states he sat during his trial when he was condemned to death, in the reign of Henry VIII. The original is in the possession of the Lord Bishop of Bath and Wells; also a model of the above in ivory, on a scale of $1\frac{1}{4}$ inch to the foot. The latter stands on a carved ivory pedestal; the design of it is taken from a portion of the magnificent architecture in the Vicar's-close.

Whitby exhibits a tempest-prognosticator, invented by Dr. Merryweather, who states that he has forwarded to the President of the Philosophical Society notices of impending storms for the last twelve months. These notices are filed, and the inventor appeals to them as the vouchers of the accuracy and value of his invention. Similar notices have also been forwarded to Lloyd's, and which we are informed are now posted in the reading-rooms of that establishment.

Whitehaven contributes to the Exhibition a magnificent piece of furniture 'yclept "Aldroband's Cabinet," made by Mr. King, carver and gilder. It is entirely composed of British oak, in three varieties, pale, brown, and black. The black, which is as rich and fine a specimen of ancient growth as could be desired, was found by the Rev. Henry Lowther, embedded 10 feet below the present surface of the soil. The design of the cabinet was suggested by the description of that belonging to Oldbuck, in Scott's novel of "The Antiquary," and the details are intended to commemorate the early progress of the art of printing and the Reformation. The lower part, which is 5 feet 6 inches by 2 feet 6 inches, contains, in the front, two deep recesses, with two drawers above, containing secret drawers by way of keeping up the character of the old cabinet. The two drawers are fronted by rich carving in light oak, surrounded by a very elaborately carved moulding in black ditto. Externally, the front recesses

present two beautiful Saxon arches of black oak with twisted columns, divided by a brown oak bracket, all richly carved. One corner is supported by a figure of Guttenberg, the inventor of the art of printing, and the other by one of Caxton, the first English printer. In the sides of this part, are panels opening into recesses with shelves. The base is ornamented with rich mouldings, and is supported upon tortoises. The upper part of the cabinet is 5 feet 4 inches by 2 feet, and contains a centre or front compartment, and two side ones. The centre one is 4 feet by 2 feet 6 inches, and is fitted up inside with shelves. The outside decoration is a superb Saxon arch, ornamented with the old English or black letter alphabet, and enclosing, like a frame, a pictured panel representing Aldobrand, the journeyman printer, presenting to "Jung-frau Bertha" his first proof from her father's press, the ability to work which won her for his bride, and uttering the appropriate words, which he afterwards adopted for his motto, "Kunst macht Gunst," —*Anglicè*, "skill wins favour."

From Wisbeach is an artificial leg, of very beautiful workmanship and perfect proportion, manufactured by Mr. Benjamin Bossingham, a journeyman tailor by trade, who some years since had the misfortune to lose his leg, and whose inventive powers have supplied the deficiency in his own case with complete success.

From Wolverhampton, there are some highly-finished specimens of japanned papier-mâché. Among which are six series of trays, embellished with landscapes, views, scenes from Goethe's Faust, &c.

Worcester is one of those places celebrated for the great beauty of their former productions in china. In brilliancy of colouring it surpassed even Dresden and Sèvres, and fine specimens of old Worcester china are now rare and bring a very great price. Of late years, great efforts have been made to revive the ancient excellence of this manufacture, and some most beautiful articles are now exhibited by the Messrs. Grainger, of that town; amongst these there are an ewer and basin of very elegant design, painted turquoise ground, with rush-leaf handle and base,

chased gold and burnished edges; tureens, with morone ground, handles designed from the leek, chased and burnished gold; and with mat blue ground and Dresden flowers in medallion; a *déjeûner* service and tray of egg-shape design, imitation honeycomb, traced in turquoise, with ears and leaves of wheat; a vase, intended for sauce, to which the design is highly appropriate, in representing the sauce as applicable to fish, game, and fowl—the fish being painted on the foot, the game hanging in relief from the sides; and the fowl appearing on the stopper.

Mr. Pattinson, a workman of Workington, has furnished a very beautiful specimen of carved work, consisting of a full-length figure of Queen Victoria, in her marriage attire, holding a bouquet, in which the rose, thistle, and shamrock are intertwined. The figure is in *alto relievo*, and is surrounded with a garland, comprising fruit, flowers, leaves, &c., of this and other countries, surmounted by a bust of the Prince Consort, and supported by a cherub. The characteristic features of the Queen and the Prince are particularly striking. The size is about 5 feet by 2½ feet; the execution is elaborately chased and creditable to him as a tasteful and painstaking artisan. The work is in Chepstow oak, formerly the windlass of the brig Mary of this port.

FOREIGN CONTRIBUTIONS.

France is the principal foreign contributor in the number, variety, and quality of the articles displayed. Furniture, silks, woollens, and cottons, tapestry, carpets, china, bronzes, and jewellery of every imaginable description are in her collection. Belgium sends splendid fire-arms, carriages, glass-work, china, and lace. From Austria there is a great display of furniture and musical instruments. Russia exhibits hempen manufactures, raw materials, and mineral products. The German collection includes mineral products from Prussia, and chemical preparations used in manufactures; porcelain and stone-ware; glass from Frankfort, with specimens of typefounding and letter-press printing. There is a large display of textile fabrics, manufactured in some instances from

British yarns. Specimens of dressed leather and paper, and a full illustration of Berlin iron manufacture, and of high-class works in bronze. From Saxony come rich silk stuffs for tapestry, furniture, carriages, &c., satins, damasks, laces, and embroideries, woollen manufactures, llama flannels, hosiery, and gloves. There is a great display of musical and philosophical instruments, and specimens of porcelain, from the royal manufactory at Meissen. Wurtemberg sends watches, clocks, and musical instruments, various specimens of textile fabrics, manufactures in leather and paper, curious toys, and confectionery. Hesse sends, among other things, interesting specimens from the salt and peat works at Salzhausen, and from Darmstadt and Offenbach we have ornamental iron, gold, and silver work. The German collection also includes, among the fine arts, stationary, carving in wood and ivory, and fine specimens of stained glass. From Nassau comes a great display of mineral wealth and mining industry, also mineral manufactures, such as nickel-silver, marbles, and clay pipes. Hamburgh shines in the German collection, from the multifarious character of its contributions; these include printed and painted tablecloths, oil-cake, pianofortes, *mousseline de laine* cravats, birdcages, electro-magnetic clocks, and embroidery. From Lubeck come preserved vegetables and eatables, embroidery, guns, and leather. Holland sends raw materials, and machinery of a most useful and practical character. Among other things forwarded thence, is a powerful steel magnet, with an attractive force equal to 500 lbs. Its manufactures are ropes, blankets, woollens, coverlets, bed-ticking, with a few carpets, and specimens of embroidery and silk. From Denmark the leading feature of the contributions is a rich assortment of porcelain, from the royal manufactory at Copenhagen. Switzerland contributes embroidered muslins, jaconots, gauzes, muslins woven in colours *à la* Jacquard, merinoes, silk stuffs, from forty-two manufacturers of the canton of Zurich, 2,814 specimens of ribands from Basle, curious applications of leather and straw, carving, cabinet-work; but, above all the rest, clock and

watch-making. Tunis, besides a fine display of interesting objects connected with the habits and manners of the country, sends over a splendid display of dried fruits and other vegetable productions. Sardinia contributes merino wools, raw silks, olive-oil, and mineral productions in great variety; velvets, silk plush for hats, embroidered cambric handkerchiefs, ornamental furniture, and sculpture from Genoa. Watches, musical instruments, and specimens of carving, from Turin. Greece sends marbles from Hymettus, Pentelicon, and Tripolitza, *rosa antico* from Scutari, emery pozzolana, lithographic stones, meerschaum and soap earth, silk sashes, musquito curtains, and handkerchiefs, silk in the raw state or in thread; and dresses, and works of art from Athens.

Among the Austrian contributions, are beautiful articles, well worth attention, a set of chessmen carved in the most tasteful and exquisite manner; an inlaid oak table, so beautifully executed, as well to bear comparison with its numerous rivals; some beautiful and effective glass paintings; and some curious and most valuable anatomical figures in papier mâché, by the celebrated Fleischman.

From Vienna there is a magnificent and costly contribution, consisting of four rooms of a palace, each appropriately furnished and decorated. The material is a peculiar Indian wood, rather lighter in colour than rosewood, and it is sculptured in the most artistic manner, after the chastest designs of eminent artists.

The Chamber of Commerce in Vienna has sent an album made for Queen Victoria, after its exhibition at the Great Exhibition, which contains drawings of all the national costumes worn within the Austrian dominions, and a collection of the principal national melodies.

Likewise a revolving hand-bookcase and *secrétaire* comes from the Emperor Francis Joseph, as a present to her Majesty Queen Victoria.

Amongst the models is one of the cathedral of Bambery, in Bavaria, in alabaster, by a poor bookbinder, who, *con amore*, has laboured at it, overtime, for the last six and a-half years, and succeeded in finishing an architectural

model of the most interesting kind. It is scrupulously correct, not only in every detail, but in every stone, fitting, and ornament, inside and out.

One of the most striking objects in the Exhibition is the colossal lion by Ferdinand Miller, of Munich, which is 14 feet long and 8 feet high. The fine proportions, majestic strength, and calmness of its position, impress themselves at once upon the beholder. This lion belongs to a group of four, which forms the crowning ornament of a new town-gate.

In sugar-work, Oschenfurt has assuredly surpassed all competition in the production of a bouquet, which has cost eighteen months' labour; it consists of roses, lilies, asters, pertererias, oleanders, centifolias, dahlias, lilacs, and other flowers with foilage, all executed and grouped most naturally and tastefully.

Belgium has contributed to the Exhibition many beautiful specimens of skill and artistic excellence. First, however, in the consideration of ladies at least, are the exquisite laces of Brussels, in great variety and profusion, for all purposes of female dress, from the cap border to the ball-room skirt. Brussels also sends a magnificent stained glass window; also a collection of glass, rivalling in beauty the far-famed Venetian "verres filigranées."

From Mons there is some very fine china, amongst which is a life-sized bust of King Leopold, which is excellently and truthfully rendered in biscuit-porcelain.

It is seldom that we have seen decoration carried further than in a gun from Liège, Belgium. The utmost elaboration and the greatest taste is visible in its ornamentation; the precious metals being introduced to relieve the gun-metal, with the happiest effect.

Liège exhibits a great variety of highly-wrought fowling-pieces and pistols; several specimens of cannon and cannon-balls from the Royal Foundry; and other implements of war. These are formed into an ornamental group, with the cannon and balls from the Royal Foundry in the centre, the ornamental guns, pistols, &c. radiating around them.

The celebrated M. Geerts, of Louvain, exhibits two

statues in wood, in the taste of the fifteenth century, elaborately coloured and gilt, and a group from the Martyrdom of the Innocents, of much originality of conception. And M. Hanicq, who is so well known throughout Europe for the taste he displays in Catholic devotional works, as well as for the sumptuous character of their style, furnishes many of the best he has executed, arranged in a novel manner, which contributes to the general effect of the compartment he occupies.

Namur, the Sheffield of Belgium, exhibits a magnificent collection of guns and pistols, cutlery, and glass; the latter, in some instances, worthy of ancient Venice, and in the style which made that city so famous in bygone days, showing those delicate interlaced threads of coloured glass introduced in the stems of drinking glasses, or over the surface of glass cups and pateræ, which give so much beauty to this peculiar fabric.

From Bohemia we have an importation of a new preparation of some species of wood, called belly-wood, which is thought to be more adapted for the sounding-boards of pianofortes than the wood now used; and it is thought that it will in time be used exclusively for that purpose.

Saxe Coburg Gotha sends some specimens of porcelain, which are truly artistic. Amongst others, is a large fruit-vase of extreme beauty. The postament is hexagonal, and the sides ornamented with bouquets of roses: from the base rises the slender pillar of dark blue ground colour, richly gilt; and on the summit of this rests the wide round vase, which is simple, without ornament, the interior of plain gold. The exterior corresponds with the pillar.

While our fair sisters in many parts of this island were stitching at the monster carpet, which forms an interesting portion of the Exhibition, while even royal fingers were employed in designing a carpet for the same purpose, a young lady in Germany was, during the most patient, persevering, and incessant labour of more than six months, executing a work which, we predict, will excite no little interest and admiration in those even who are generally considered unqualified to pass an opinion on articles of

female handiwork. Miss Bernhardine Gompertz has embroidered for the Exhibition very accurate portraits of the Queen of England and the Prince of Wales, on white silk, with a species of very fine black embroidering silk, called hair-thread. The stitches of this surprising production of female patience and perseverance can only be distinguished through a magnifying glass, so that, at first sight, it is always taken for a fine copperplate or steel engraving. The quantity of silk which has been used weighs only about a quarter of an ounce, although the picture is of the size of a large quarto sheet.

From Sonnenberg, near Coburg, there is a large plastic tableau, with about 400 figures, partly moveable, representing a national fete of the Germans, in all its original details. For the scene of this, the chateau of Rosenau, the birthplace of Prince Albert, and environs, situated in the immediate neigbourhood, have been chosen. The size of the tableau is fifteen feet by ten, and, on account of the machinery which moves the figures, *jet d'eau*, &c. and the music which is contained inside, it rests on a pedestal specially provided for it.

Some curious Danish files are exhibited, cut by Mr. J. W. Naylor, of Copenhagen, the son of an Englishman, who emigrated to that city many years ago. There is a four-square equal rubber, weighing ten pounds, cut as a smooth file, on the two opposite sides of which are represented, in the cutting, the four principal branches of the trade—as the forgers, the grinders, the cutters, and the hardeners; and in the middle of the same sides are the Danish coat of arms, and that of the city of Copenhagen. On the third side is the name of the city, cut in large letters, in an ornamental ground; on the fourth is a full view of Copenhagen. The tang consists of four serpents twisted together, of which two are cut out as files, and two as rasps. The tang unscrews, and from the body is taken out a round equalling file, ten inches long, on which is cut the maker's name, and the year 1851, twined round from the point to the tang, in a double cut ground. A little knob is then opened in the point-end of the round file, and out tumble half-a-dozen different little

files and rasps; then the tang unscrews, and a five-inch taper three-square file comes out, cut with ornaments on the sides. This unscrews, and a little four-square file comes out, three inches long, double cut, in a Vandyke style. This little four-square file unscrews, and a round file comes out, one inch and a quarter long, which would almost float on the surface of the water. This also unscrews, and a file is taken from the inside of it.

France, as was expected, is by far the greatest contributor of foreign countries to the Exhibition. She sends articles to the value of near a million sterling, something in every department, much that excels in taste, ingenuity, and curiosity, and little that will not pay for examination. First, there is a very splendid collection of arms, worthy of especial attention for their beauty and high finish. Amongst the rest is a mammoth decanter of cut crystal, without a flaw. This wonderful thing is of such dimensions, that three persons of ordinary height may sit with ease inside, and eat a succulent dinner on a round table a yard in diameter. A double ladder serves to bring people up and down out of this decanter, which, if it have glasses to match, must also possess a larger person than the Spanish giant to drink out of them. This huge bottle has been manufactured at the glass foundry of the Rue St. Sebastian, in Paris, internally its height from the base to the shoulder is 3 yards, and the circumference at the paunch 9 yards. The stopper weighs 40lb., and the whole decanter 12 cwt., and it is capable of containing no less than 8 hectolitres and a half of wine.

The Chevalier Girometti, who has long been celebrated for the beauty of his gems, whether after the antique or of his own designing, exhibits a piece of workmanship which is probably unrivalled amongst the productions of modern gem engravers. The stone itself merits a separate description, on account of its extraordinary size and beauty, being a cornelian of three strata, about 4½ by 3½ inches, an oriental gem, which cost the chevalier no less than 600 dollars. The subject selected by him is a repetition of the celebrated sardonyx cameo in the Paris collection, representing Ptolemy II., Philadelphus, and his wife

Arsinoe, whose beauty was such that she was worshipped after death under the name of Venus Zephyritis; nor has the chisel of the modern engraver belied her ancient reputation for loveliness.

M. Dumont, author of a project for the establishment of the electric telegraph in Paris, exhibits a novel and most invaluable apparatus, which he has recently invented. It consists in securing, simultaneously, the ordinary locks and bolts of a dwelling, by means of a very cheap and simple machine, which the inventor terms "electroferme," and is contained in a box about 4 inches square. This instrument, which may be placed on a table, chimneypiece, &c., and in any part of the house desired, gives notice, by sounding an alarum, of the opening of a door or window, without the party entering being able to prevent it.

France sends us a boat, which, it is said, realizes the great problem of submarine navigation. It came by the river from Creusot to Paris, proceeded to Calais by means of its own engines, which are on the screw principle. At Calais, it plunged under water, and proceeded to Dover, where it arrived in a few hours. From Dover, it ascended the Thames to London, and now figures in the Grand Exhibition.

The chief object selected from her contributions for the decoration of the nave, is a fine piece of sculpture, by M. du Seigneur, representing the Archangel Michael overthrowing Satan.

There is also a machine for composing and distributing type, at the rate of ten thousand an hour. The same thing has been attempted in Germany, in this country, and in the United States of America, with little success.

One manufacturer produces a chandelier, set with enamels and imitation pearls, the effect of which, when lighted up, is as novel as it is brilliant; another sends some vases of rather small dimensions, but most artistically designed and executed, such as Cellini would not have disowned.

The carpets and tapestry exhibited are many of them magnificent, and some of them of exquisite beauty, well

maintaining the fame of France in the production of this class of manufactures.

The ornamental furniture sent from Paris is fully equal to what we expected, and this is saying a great deal; for the Parisians have long been admirers of ornamental furniture, and encourage the exercise of the highest art that could be displayed in its construction.

There is a bookcase of ebony and silver, ornamented with *bas reliefs*, statuettes, flowers, animals, &c., by Messrs. Barbidienne, an exquisitely beautiful thing, altogether worthy of the reputation of its exhibitors. It was, we we believe, chiefly designed by Mr. Graham, of Oxford-street, and the modelling executed by M. Clesinger, one of the first sculptors in France, who himself exhibits a beautiful statue, in marble, of a Bacchante reclining; also, a buffet of Fourdinois, 15 feet long and 18 feet high, of walnut, the first stage supported by four dogs, rampant; and the second by four figures, representing the four quarters of the globe, two-thirds the size of life.

Amongst the things most beautiful in this wide world's Exposition, certainly stands the vast collection of china; and that perhaps which deserves the chiefest notice is the production of Sèvres, so long at the head of this manufacture. Worthy of especial regard are two great ultra-marine jars from this factory, extremely gorgeous, and two vases of entirely new form, designed by M. Klagman, the sculptor, to whom we owe the beautiful figures of the Louvois fountain. The ornaments of these vases are a pair of bas-reliefs, representing the nature of the ox and horse. The horse is surrounded by four allegorical figures, typical of strength, speed, spirit, and courage. The ox, with his yolk-fellow, ploughs the land, attended by the Seasons; close to the handles of the jars are placed two minor bas-reliefs, where a shepherd shears his sheep and herds his goats.

Amongst the articles from Greece, is a magnificent specimen of the Albanian costume, to which Lord Byron has given so much celebrity. This particular dress is worth 2,000 dollars, or about £400; in the preparation of which fifty persons were occupied for three months.

Though Holland is much less a country of manufacturers than of traders, deriving her wealth chiefly from commercial pursuits, yet she contributes a considerable variety of articles. In carved furniture, however, she has great reputation, some very fine specimens of which are sent from Antwerp. Visitors will be particularly pleased with a Gothic book-case and *écritoire*, ornamented with most elaborate tracery, pinnacles, and statuettes in ebony, of chaste design and execution; and a bedstead in the style of Francis I., with large figures and ornaments, singularly bold in character.

Among the curiosities, Hamburgh furnishes a very beautiful cannon, made of agate; a magnificent escrutoire of deer's horns, with rich ornaments of ivory, a piece of such intrinsic and artistic value that it is estimated to be worth 2,500 marks, about £150; the twelve Apostles, in ivory, carved with great depth and expression; and a very curious glass plate, representing on both sides, in different colours, the battle of Marston Moor.

The Zollverein furnishes a superb chess-board, valued at 1,200 guineas, the checks of which are of mother of pearl and tortoiseshell, the rim of gold, and the chessmen of gold and silver, elaborately wrought, and bearing the portraits of great historical characters, such as the Emperor Charles V.

A young German lady contributes a darned table-napkin, and a darned piece of lace! The young lady has cut a large piece out of a damask napkin, of an elaborate pattern, and has so skilfully filled up the vacuum with her needle and thread, that the most experienced judge of damasked linens could not distinguish the new portion from the original cloth. The fair exhibitor darns stuffs which are not so thick as damask, so that the new portion can only be distinguished when the piece is held against the light, when a slight ridge is observable round the part. The second contribution is more clever still, for it is a darned lace, which is so well mended that it is quite impossible to find the place where the holes have been. And there can be no deception in the case, even if we could have ventured to suspect such a thing, for Miss

Gerson brought lace in a very dilapidated state to the President of the Committee for the London Exhibition, and he put his seal upon the two ends. When the piece was brought back, although it was subjected to the severest criticism, no flaw could be discovered in the lace which before had been so much torn.

From Dantzig, there is a very curious and most interesting display of amber, consisting of a collection of pieces of raw amber, intended to show the different kinds of amber, its various forms, the peculiarities of its formation, and its numerous varieties, the fruit of many years' laborious research; a tray of polished amber in a silver frame, in the centre of which is the English crest, surrounded by rays; several snuff-boxes, emblematically cut, some richly mounted in silver; brooches of amber cameos; seals, ornamented with silver; and, though last, not least in interest, a miniature carriage, built strictly according to the rules of carriage builders, with driver and dog, of very fine stone.

The King of Hanover exhibits some extremely fine and beautiful statuettes from the government iron foundry in the Harz.

Mr. Engel, a Hungarian sculptor, who resided some years in England, exhibits a group in marble, executed for Prince Albert, representing an episode from the conflict of the Argonauts and Amazons. One of the latter is supposed to have been wounded in the fray, but rescued by one of her companions from the sword of her aggressor, who, in his turn, is wounded and overthrown. The moment chosen by Mr. Engel for the subject of his group is that in which the triumphant heroine, supporting her wounded comrade with her left arm, grasps a battle axe with her right, and is on the point of dealing *a coup de grâce* to the prostrate Argonaut, when her hand is stayed by her more compassionate friend, whom an instantaneous awakening of the softer passion appears to have interested in his behalf.

Italy, in contributing her quota to the World's Exhibition, has furnished some rich fabrics and tasteful specimens of art. Rome sends three groups in marble, size

of life, representing Cupid and Psyche, Gratitude and Innocence, defended by Fidelity, by Benzoni. Two circular mosiac tables, one of the Byzantine school, inlaid with gold, and the other Cupid, as described by Petrarch, with an allegorical border. A vase of oriental alabaster, with handles, all wrought from one mass, with pedestal and basement; diameter 3 feet 5½ inches. And a circular mosaic table, by Chevalier Barberi, representing the sky of Italy, with emblematical figures of the fine arts. This splendid work has been executed for the Emperor Nicholas, and, with some slight variations, for Lord Kilmorey, and may be considered, both on account of the rare minuteness of its finish, and the exquisite taste of its composition, as one of the finest productions of its kind. From Genoa, there is a great display of those silks and velvets for which she has been so long and so justly celebrated. From the same place are a number of beautiful specimens of statuary, among which, as especially worthy of attention, are a marble statue of a Bacchante, in a case; the bust of a veiled vestal; a contest between two children; a sleeping Venus; and a smiling boy. There are also a round table, with drawers, in cut frieze-work, representing the signs of the zodiac, in the centre of which is a medal representing a Neapolitan improvisatore; feet are arabesque dolphins, lion's paws. A round table, carved, with drawers adorned with precious stones; and a medal representing the chariot of the sun, the four seasons, and the signs of the zodiac. Two wooden vases, painted in perfect imitation of china. A figure of Christopher Columbus, on a pedestal, in silver filagree, under a glass case. A frame containing specimens of embroidery.

Nice sends a drawing-room table, of a parallelogram form, rounded off at the two ends, made of olive-wood. The surface is in mosaic, the different squares representing historical subjects, inlaid with indigenous wood, in imitation of oil pictures.

The Grand Duke of Tuscany exhibits the most valuable table beyond doubt in the whole world. It is of exquisite mosaic work, made of hard stone, and is the

result of eighteen years' continuous and laborious application of the artist. It is valued at the enormous sum of 600,000 francs, or £24,000.

To Prussia we are indebted for the exhibition of the most beautiful castings in iron, many of which are far beyond the competition of the rest of the world. Among the most admirable of these castings from Berlin are two candelabra on high pedestals. The design is the same in each; a classically elegant composition by Professor Strack, having as a base a claw tripod with arabesque reliefs, whence rises a shaft which is upwards encircled by a triad of graceful figures, and terminated by a flat top whereon is placed a highly-spirited Amazon group, the work of Professor Fischer, also cast in iron. There is a copy of the Warwick vase, contributed in order to show the extreme delicacy of the casting. Besides these are a cast after a pilgrim angel, by Wichmann, a charming figure 3 feet high; also a figure by Peter Fisher, from the monument in St. Sebald's, Nuremberg; twelve statues and twelve statuettes, together with a collection of candelabra, branches, and Berlin bijouterie, representing the existing condition of the manufacture.

Berlin also exhibits wood carving of a very high order of artistic excellence; a large frame for a picture by Raffaelle, and intended for the palace of the late king. The principal point in the composition is the figure of the Saviour, which appears at the top, supported and accompanied in other parts by angels, and all the emblems of the crucifixion. Among the silversmiths in Berlin there was but little preparation for the Exhibition; there is, however, a centre-piece of beautiful design in progress by one of the court silversmiths; it is of silver, enriched with dead gilding.

Casting in zinc is an art which in Berlin has been brought to an unparalleled degree of excellence. Among the works exhibited of this kind is a zinc reproduction of the magnificent bronze group which ornaments the entrance to the Museum of that city. The subject is a mounted Amazon attacked by a tiger; it is the work of Kiss, of the size of life, and for spirit, truth, and natural

action, ranks in the first class of modern productions; it is finished and coloured as a bronze. Other productions in the same material are Baily's "Eve," also of the size of life; a boy and a swan by Kalide, and a statue of one of the Muses. There is also a very striking fountain, cast in zinc, representing a boy and swan.

The most attractive articles from Saxony are the beautiful productions of the porcelain manufactures of Dresden, the principal objects of which are an enormous looking-glass frame, decorated with birds, flowers, and fancy ornaments; two vases, 4 or 5 feet high, one of them in the *rococo* style, gracefully adorned with the entwined foliage of the convolvolus and nasturtium; the other imitating the Greek, and evinces a chaster taste; it is decorated chiefly with enamelled paintings, in the forms of medallions, round the base and round the lid. There is also a camelia tree, more remarkable for its *fac-simile* resemblance to nature than for any originality of conception or gracefulness of design, and unless the illusion be dispelled by touch, every leaf to the observer is a real leaf, more or less developed and coloured, and every blossom marks likewise a distinct and successive stage, from the closed bud to the full-grown and expanded flower. Among the Dresden china is likewise a curious and pleasing model of the town in porcelain, upon a scale large enough to admit of accurate models of the principal buildings and churches of the town.

Among the articles which the industrials of Saxony have sent to the Exhibition, there is a church bell, cast in the celebrated foundry of Friedrich Gruhl, in the Moravian colony of Kleinwelke, near Bautzen. This bell is of extraordinary beauty and weighs 650 lbs. On the front side is a crucifix raised from the bell, and only connected with it in the casting by the four ends; on each side of the crucifix are inscriptions in German, which translated in English, are

"Come before the Lord, and worship him in the beauty of holiness."

"Serve the Lord with gladness: come before his presence with singing."

The reverse of the bell shows in *bas relief* a head of Christ, after the model of the medallion cut by Mr. Hofgürtler Seifferth, of Dresden. The beautiful ornaments of this bell are designed by Mr. Schramm, of Zittau, and modelled by the sculptor Schulze, of Bautzen.

From Spain we have a mosaic table of the most extraordinary beauty. It is the production of a number of individuals who have long been employed in its composition, and must have required more patient industry than even the skill and talent so largely displayed in it. Also, some highly-tempered sword-blades.

Among the specimens of ingenious workmanship from the watchmakers of Switzerland, is a gold penholder, with a diminutive watch at the top of it, indicating not only the hours, minutes, and seconds, but even the day of the month.

Amongst the contributions of Westphalia, Silesia, and other states of Germany, are interesting specimens of linen and silk manufactures from the raw material, through all the various stages, to the most delicate cambrics and the richest velvets.

From Syria we have specimens of the manufacture of silk, gold, silver lace, and embroidery, native jewellery, and apples of Sodom. The Pacha of Jerusalem sends a few specimens of the Bethlehem work in mother-of-pearl, which is brought by the Hadj from Mecca, such as the crucifixion, and other holy subjects. Mr. Consul Finn: Palestine flowers, arranged in a box of olive-wood, and some specimens of Jerusalem marbles, contained in a box made of one of the stones of Jerusalem. Colonel Rose, her Majesty's consul-general in Syria, sends an antique gold mask, found in a Greek sarcophagus, near Gebal, which was placed on the face of a female corpse, and still retains her features.

Turkey exhibits specimens of a variety of articles. One or two specimens of ore from each of the mines known as Yeny-Toprag, together with manufactured metals in various stages of completeness; various earths used in the plastic arts; essential oils; morocco leather of all colours, Russia leather and parchments, skins of

panther and other wild beasts, furs of the fox, wolf, martin, skins of the fox, jackal, wolf, hyæna, wild cat, badger, and beaver; shawls, stuffs, carpets, velvets, plaited ornaments, girdles, bands, bridles, and specimen of each kind; taffetas, silk and cotton goods, handkerchiefs, coverlets, embroidered work, linens peculiar to the service of the Turkish bath; works in palm leaf and reed, and in straw, such as fans, fly-chasers! woods precious for their odour, colour, or other qualities, as sandal, cypress, &c.; stones valuable for their uses, as marble, alabaster, and limestone; gold and silver personal ornaments; articles of bone, ivory, and pearl; tobacco, snuff, opium, &c.

AMERICAN AND COLONIAL CONTRIBUTIONS.

The United States of America, though now an independent nation, great and flourishing, and in some degree our rival in the commerce of the world, is still, strictly speaking, a colony of this country, and is far more like the mother country than any of our dependent colonies are; in fact, she may be properly styled a vigorous Young England, with similar comforts, habits, customs, and institutions.

Of her contributions, we shall first speak of "an American present to the Prince of Wales;" it consists of a pair of superb sculls or oars, enclosed in a case of black walnut, exquisitely fashioned. The mountings are very costly, and the weight of silver attached to them is about eighty ounces. An inscription on a silver plate indicates the presentation. The sculls cannot fail to attract much attention. Accompanying them will be a highly-finished oar, 36 feet long, and two lilliputian sculls of the size of pens. The wood is white ash, manufactured by Mr. Page, of New York.

Mr. Black, of New York, exhibits a new steam-engine, the motive power of which is applied directly to the driving-wheel, without the interruption of any cylinders, piston-rods, walking-beams, steam-chests, condensers, or other apparatus. By this means an immense amount of friction, room, and capital is saved. The driving-wheel is a submerged one, and is so contrived, that an immense hydraulic power is also obtained without any cost what-

ever. Several of these engines are in operation—one near Williamsburgh, in the state of New York, where it is employed in sawing timber into planks for floors. It drives the machinery with a degree of speed and force beyond any previous calculation. A two-horse power was produced by two jets of steam, from two tubes of one-eighth of an inch in diameter, with the consumption of only one bushel of coal in the space of ten hours, and was kept during the whole time in active use. New York also sends a new locomotive, which consumes its own smoke. The outside of it differs very little in form from the ordinary baggage-vans used on railroads in the United States; and the whole machine is free from that unpleasant noise generally attending engines. The object of this new locomotive is to do away with horse-power on the New York city railroads, for which it seems likely to be attended with success. The engine, no portion of which is visible from the outside of the carriage, is ninety-horse power, and it will draw a train of twenty carriages.

A new fire-engine is exhibited, which is said to throw seven streams of water at once, three of which reach one hundred and sixty feet in height.

Professor Page, of Washington, contributes a machine which has excited a vast deal of interest in the United States. Its motive-power is electro-magnetism. The engine is between four and five horse-power, and is operated by a battery contained within the space of three cubic feet.

Boston sends a most valuable commercial invention—an autographic press, by which a letter, written on prepared paper, can be transferred by a short process to a metallic plate, from which any number of copies may afterwards be taken on common paper and by ordinary pressure; also a small machine by which a daguerreotype of miniature size may be magnified to the size of life, or larger, and reflected upon a canvas, or any other flat prepared substance, so that an artist may seat himself before it, and paint it as it appears. And Taunton, in the same state, contributes an umbrella

so constructed, that it will divide and shut up into so small a space, that it can be carried in the pocket with ease.

Once we expressed our opinion as to the impossibility of anything, by saying "you might as well attempt to call down lightning from the heavens," but Franklin actually did the feat, as many have since. Lately one hears the hopeless wish expressed that we could replace our often incompetent servants by mechanical machines, and now Mr. Joel Houghton, of Ogden, in the state of New York, actually exhibits in the Crystal-palace, two machines of this kind. One is constructed for washing dishes. The articles to be washed are placed in a rack and set upright, when it is carried to a vessel containing water and a little soap, and by turning a crank the dishes in the rack are whirled in great style to remove the dirt. The unclean water is then drawn off and replaced by clean boiling water, and the crank again turned a few seconds; the dishes are then clean, and can remain in the rack, which obviates the necessity of handling them repeatedly. The other is a machine for washing floors; it has a spring, a drum with a cord in it, and a few levers peculiarly combined, and worked by cams, all operated by a handle revolving a wheel. All that is necessary to be done is, to turn the handle, move it every square yard, and supply it with clean water; by turning the handle it scrubs the floor, wipes it up, and wrings out the cloth.

New Jersey exhibits a mammoth specimen of a mineral found nowhere in the world but in Sussex County, in that state—the red oxide of zinc. This piece weighs about eight tons, and required a team of twelve horses to remove it from the mine; and as it descended the mountains, blocks and tackles had to be fastened to the trees to hold it back.

In the fine arts there are some oil paintings, busts in marble, and a piece of sculpture by Mr. Stephenson, possessing great merit, and calculated to excite interest, from its peculiar American character. The design is a dying Indian chief. The figure, which is of the size of life, represents a noble specimen of the North American Indian,

who has received a death-wound in his side, and has fallen upon his right knee, with his left leg projected forward, and resting on the foot. The head is bowed, and the agonies of death are expressively stamped upon the countenance. The left arm has fallen, almost powerless, the hand resting upon the ground, and just relaxing its grasp of the arrow, which it has withdrawn from the deadly wound, while the remaining strength of the right arm is employed in preventing the reluctant fall of the proud but stricken chief. The form and features are perfectly characteristic, and the whole presents a fine idea of the North American Indian. Anatomically speaking, the figure is formed with extraordinary accuracy and artistic skill.

A newly-invented mariner's compass is exhibited by Mr. St. John, which detects and shows the amount of all local interference with the true action of the needle.

The Wenham Lake Ice Company intend to make a display at the Exhibition, proportioned to the increased importance of solid water, and to show in a variety of handsome and convenient forms the best means of preserving ice from melting.

An improved plough is exhibited, for enlarging or narrowing the cut of the furrow. A cast-iron box is fitted to the face of the inner stilt of the plough, and it has a flange above and below, to prevent the inner end of the beam from being directed up or down, and to hold it firm. The beam is moved endways by a long screw-bolt, which is united to the vertical bolt, which passes down through the beam and body of the mould-board, and answers for the axis on which the beam is swung to change the line of its direction. The manner of keeping the beam close to the stilt, and yet to change it accurately and easily, is something which commends itself at once to favour.

A magnificent set of harness is sent from Philadelphia; it is said to have cost 3,000 dollars, or about £600.

One of the most beautiful and curious things in the Exhibition is a collection of the leaves of the American forest, carefully prepared by Mr. Bonneville. These leaves are arranged in natural order, upon sheets of

Bristol-board, and bound in rich garnet-coloured velvet, with gold clasps and corners. The leaves are so prepared that they retain their natural colour, and will make a beautiful display of the wonderful change the foliage undergoes, and which takes place in no other part of the world.

Among the manufactured articles, the most curious thing in the whole Exhibition, is a coffin made of metal, from which the air is exhausted, in which a human body could, it is said, be preserved for ages without decay, and which contains a bouquet of flowers as fresh as when it was first placed there.

Canada furnishes her quota to the Exhibition chiefly in agricultural products. Among other articles from thence are—a veneer of bird's-eye maple, 100 feet long, sawn from a single log; leather made from porpoise-skins, soft, fine, and durable as calf; and oil, not much less bright than sperm, from the same odd, and, in those northern parts, multitudinous fish. A very pretty specimen of carving in wood, a plan of a Canadian farm, a bark canoe, and some curious specimens of bark-work; an Indian dress from St. Catherine, Western Canada, Indian saddle and war-pipe, a musk-rat fur coat and cap, and some porpoise leather, cooking-stove, chopping-axes, rifle, printing-types, &c., are sent as furnishing very creditable specimens of Canadian workmanship. A collection of copies of every newspaper and periodical published in the province, on the 1st January, 1851, is also sent, and will form in future ages, if preserved, an admirable inference as to its condition and progress. There is also a specimen of fine maple sugar, an article of great importance to the scattered inhabitants of the Canadian backwoods, who always make their own sugar.

New Brunswick esteems herself for her wood and shipbuilding, and sends models of ships, river craft, fishing-skiffs, race-boats, and pleasure-yachts.

Among the articles from Nova Scotia are six cases of native birds, most perfectly and beautifully preserved, comprising partridge and brood, heron, woodcock, hawk, crow, red stork, bon or rusty grachk, humming-bird and

nest, with young, and a variety of others; three cases of insects, which are very much admired; two hundred specimens of the wild flowers of this province, preserved with great care, and most tastefully arranged; and a large collection of very beautiful minerals. There is also the head of a moose-deer, prepared by Mr. Downes. This fine animal is fast becoming extinct, and will become an object of curious inquiry in future years. It is often killed weighing 1,000 to 1,500 lbs. From the city of Halifax is a fine and very valuable collection of skins, consisting of black, silver-grey, red fox, wild cat, otter, minx, and wolf skins.

From Bahamas there are two most elegant pieces of shell-work by some young ladies of Nassau, and, perhaps, never before was such a splendid collection of shells seen arranged in so many beautiful forms. One of the pieces represents an *épergne*, with four branch cornucopiæ. It is composed of shells of various hues and devices, found exclusively at Hog Island. The other is a most beautiful *vase* made up entirely of white shells, surmounted by a wreath, with the rose, shamrock, and thistle, &c., and adorned with the Prince of Wales' feathers, Maltese crosses, numerous flowers, rye, hops, &c. The fair contributors were six months incessantly engaged in the manufacture of these two elaborate works. There are, also, specimens of sponges and turtle-shell, two of the chief commercial productions of these islands.

Bermuda sends some violins, made entirely of beautiful curled wood from the root of a cedar-tree, the sides inlaid in a very ornamental manner; and a model of a Bermuda sailing yacht, of cedar.

There is a considerable variety of articles from Trinidad equally curious and interesting, which cannot fail to create a favourable impression as to the great natural resources of this colony. The specimens of the woods of the colony are particularly fine—the bois d'orange or fustic, the sapadilla, the green poui, and the copai, will be much admired, as also a superb slab of cedar. The agricultural products of the colony comprise a variety of articles—among others, superior samples of rice, as also

of fine white muscovado sugar, prepared by means of mineral charcoal, and boiled in an open pan. The Sea Island cotton, grown at the Botanical Garden, St. Ann's, from seed obtained from Jamaica, is of excellent quality. Of the products of that wonderful natural curiosity of the island, the Pitch Lake, there is every variety of specimen.

From Demerara, or British Guiana, the articles contributed are very extensive. There are various specimens of earths, draining-tiles, and tubes, manufactured in the colony; articles of Indian manufacture, such as pots, goglets, &c., woods, skins, paddles, war, hunting, and fishing implements, models of Indian or bark houses, corals, &c.; hammocks of cotton, silk, and grass, plain and ornamented pezalls and basket-work; articles of dress and ornament made of skins, feathers, bones, teeth, shells, elytra, or beetle-wings; a very large collection of native woods, little known in this country, but useful for ship-building, and ornamental purposes. Fronds and leaves of the Troolic palm prepared and unprepared as thatch. Also, samples of muscovado sugar, and sugar made from bananas and plantains.

Visitors will be pleased to see from Malta many beautiful gold and silver chains, some very fine lapidary, and specimens of lace and curiously-worked mittens.

From our colonies at the Cape of Good Hope and Natal, we have many curious and interesting articles peculiar to Southern Africa. Specimens of wool, of which the colonies export about six millions of pounds annually, and of cotton, about which great anxiety exists as to the future supply of our manufacturers, for which we now chiefly depend upon the United States of America. Among the curiosities from the Cape, are a Bushman's blanket and battle-axe; a Kafir warrior's headdress, which unfortunately has at this moment too much interest attached to it, from the present state of that colony.

There are also specimens of skins of wild animals, especially of wild cat, leopard, weasel, antelope, gansbok, &c.; some beautiful specimens of feathers of the ostrich; a tippet made of the plumage of various birds of these colonies; enormous elephants' tusks; oil from

the tails of the Cape sheep, which are so large as to require a sort of barrow to be dragged under them for support by the sheep; various indigenous plants, and medicinal herbs, gums, &c. Of these, one of the chief staples of South Africa, is the aloes, which is spread over the vast arid plains of the interior; its large succulent leaves are collected in pits dug for the purpose, the juice received in skins, and then inspissated in large iron boilers. Among the medicinal products, is a bottle of powdered Tambootni wood, used by the Zoolus as an emetic; and a bag of Klepswert, a species of bitumen oozing from the rocks on the summit of the Winterberger, used by the natives as a cure for convulsions. There are also specimens of woods, some extremely beautiful; specimens of native clothing, and of the sambok, or country riding-whip, made of rhinoceros skin. And there is likewise a very pretty work of art from Graham's Town, intended for C. B. Adderley, Esq., M.P., who has greatly interested himself on behalf of South Africa; it is constructed of native wood, most elaborately carved, and in a style which reflects the highest possible credit upon the artist.

From the Punjaub, Maharaja Goolab Sing contributes some magnificent articles of Cashmere manufacture, to the value, it is estimated, of £10,000, which, after the close of the Exhibition, are to be sold for the benefit of its funds. The Rajah of Naba has sent several articles of value, amongst them a handsome suit of armour, inlaid with gold; and some good models of agricultural implements, the Persian wheel, of ruths, hakerees, arms, &c.

From Madras, there is a model of a splendid state palanquin, sent by the Rajah of Travancore, and a medal, with a suitable inscription, suspended by a chain, the whole inlaid with rubies, diamonds, and other precious stones.

Delhi furnishes some specimens of lapidary, which from their subjects cannot fail to be among the most interesting articles in the Exhibition. They are the production of Budr-oo-deen Ulee Khan, the well-known chief of seal-cutters in Delhi, who has supplied all the highest authorities for years, has exhausted his skill in producing

these *chefs d'œuvre*. The seal for her Majesty is a cornelian, with the corners neatly cut off; the size about one inch square. On it is cut—what, translated, runs thus:—

"First Monarch of the world, as Solomon in magnificence, with a court like Saturn, Empress of the age. Sovereign of the Seas. The source of beneficence. By the grace of God, Queen of England and Ireland. Ruler of the Kingdoms of Hindostan. Defender of the faith of Christ, the great Queen Victoria."

A seal for Prince Albert is of the same size, but cut on a bloodstone, to the following effect:—

"The distinguished by the aid of God. The noblest of the family of Brunswick. The honoured companion of the great Queen. Prince, highest in rank, great in dignity, the chief in excellence of the English Court, Albert," &c.

The artist has prepared two beautiful emeralds for seal rings, to be presented by himself as specimens of his art. One for the Queen, three-eighths of an inch in length, by two-eighths in breadth, on which is beautifully cut, when rendered into English from the Hindoostanee—

"Sovereign of the sea and land. The just by the favour of God. Governor of the world (or the seven climates), Queen Victoria."

The other, for Prince Albert, is of the same size, but has simply the Christian names before enumerated.

From Dacca division its weavers exhibit a piece of muslin, 20 yards in length, and three-quarters of a yard wide, which we venture to recommend to the especial attention of all ladies visiting the Exhibition.

Bengal exhibits a great variety of Oriental musical instruments, comprising citars and soorungees, of different sizes and shapes, together with all the different descriptions of tublahs, tom-toms, cymbals, &c., in use among the natives of Bengal and the upper provinces; a model of a Mofussil cutcherry, with figures of the session judge and the omlah; and specimens of gold and silver embroidery on velvet, models of royal musnuds, and other articles of gaudy display appertaining to the palaces, divans, and processions of eastern princes.

Hong-Kong, through the English merchants, contributes choice specimens of the silk produced in the two leading districts of Soochoo and Hoochoo, and select varieties of teas; the celebrated satins and nankeen cloth of Nanking, porcelain from Kinkin-ching, samples of embroidery and crape manufactures of Hangchoo, which in vividness of colour and beauty of texture are not exceeded in any part of the world. The beautiful grass-cloth fabrics, Fokien and Kwangtung, the plant producing which is still a puzzle to the learned; lacker-ware, carved ivory, chessmen, fans, miniature boats, and a perfectly finished joss, with a model of a joss-house; porcelain in its various stages, with the brushes, paint, &c.; and cotton quilts, with the instruments and models for working them.

The East-India Company has spared no expense to present a display of the products of Indian industry, from the countries embraced in the vast extent of territory over which it holds sway; thin cottons, muslins, cloth of gold, enamel, filagree, and chiselled silver; their gorgeous uniforms and horse-trappings; the rich-coloured, curiously-woven Cashmere shawls; the bright-dyed Persian rugs; rubies, diamonds, pearls, vessels and chains of gold and silver, models of mosques, tombs, temples, and palaces. Amongst these various articles are an elegantly-embroidered elephant's saddle, set with diamonds and jewels, an ivory chain, inlaid with gold and silver, and ornamented with precious stones, intended as a present to the Queen after the Exhibition. A large tent with gilt poles, the covering of finest Cashmere shawl-cloth, all over embroidered with gold and silver; an *étui* of beautiful opaque, gold-bound, the top forming a radiant centre, set in diamonds and rubies; a magnificent couch and six chairs, of carved ivory-work, presented by the Newab Nazim to her Majesty; a couch-cushion, worked in gold and silver thread, with the names of Victoria and Albert, the initials being diamonds, and the other letters in pearls of large size; 120 life-size figures, representing the various occupations of Hindoos, with working implements complete; and a very extensive

assortment of native jewellery and gold ornaments, from Delhi and Cuttack.

From Singapore, the entrepot of eastern commerce, the Local Committee have sent home a large and varied collection of products of the Malay Peninsula and Eastern Archipelago, among which we may enumerate the following:—the lignum aloes, eagle-wood, and calambak of commerce.

The edible bird's-nests, which owe their celebrity only to the whimsical luxury of the Chinese, are sent home for the inspection of the curious. About 250,000 piculs (weighing 133 lbs. each), of the value of one million and a half of dollars, are annually brought to Canton, one-third of which come from Java. Also Agar-agar, an edible sea-weed, which grows on the rocks that are covered by the tide. It is much used for making a kind of jelly, which is highly esteemed, both by Europeans and natives, for the delicacy of its flavour.

Another important article of the commerce of the East is trepang, or *bêche-de-mer;* specimens of which, from Borneo, are exhibited. It resembles a prickly cucumber, and is like blood-pudding, after being gutted, dried in the sun, pressed, and smoked; it is regarded by the Chinese as a luxury, much in the same way in which we regard caviare.

Of gutta-percha, now a well-known and highly-valued article, and of the bark of the tree, employed in making fishing-lines, cordage, and nets, specimens are sent. The scarce and little-known cajeputi oil, from the Moluccas, and the genuine Barns camphor, from Borneo, are singular and valuable. The benzoin, or benjamin, from Sumatra, is also much used and highly esteemed in Europe in the composition of frankincense. Tortoise-shell and mother-of-pearl, from the Sulse and Arne islands, form important items. Tin-ore from Banha; and the singular horsehair-like substance obtained in Malacca from the ejoo or gomutu palm. Gum lac, many new dyes, staining substances, are also forwarded, and bees'-wax from Borneo; various singular kinds of rice, shelled and in the husk; pearl sago, sago-flour, arrow-root, and gambir; vegetable tallow from

Malacca; canes and rattans, Amboyna-wood, clove-wood, ebony, and other choice woods from the Moluccas and Prince of Wales's Island, the odoriferous sandal-wood from Timor, and sapan-wood, the logwood dye of the Eastern Archipelago.

Gold-dust from Borneo; smelted antimony and tin. Aloe, or agave, fibre; pine-apple and plantain fibre; and raw cotton, from Acheen and Palembang, in Sumatra. Cloth made from the bark of the paper mulberry, in Celebes. Cotton cloth manufactured from native produce by the Dyak tribes.

Salendongs, or scarfs embroidered in gold thread, from Malay Peninsula, Timor, and Sumatra. Silk handkerchiefs of native manufacture. Sarong, or petticoat, and salner, or trousers, of silk from Sumatra.

Three pieces of embroidered cloth, for adorning the heads of pillow-cases, from Singapore. A hand-loom from Celebes, on which the bugis sarongs are made; with cloth in the process of weaving. A spinning-wheel for making pine-apple thread, from Singapore.

Lackered writing and other boxes, completed and in various stages of preparation, from Singapore. Ware from Japan. Clocks, &c., salvers and sweetmeats, trays, covers for dishes, ornamented with shell-work; cigar-case and skull-cap made of the pandan leaf, from Celebes. A chess-board from Penang, exhibiting specimens of the native ornamental woods. Among other curiosities are, model of an orang baai, or state barge, manufactured of cloves, by the natives of Amboyna; a hand-loom of a very complete kind from Sumatra; models of plough and harrows, and other agricultural implements in common use; sword-sheath, stilettoes, and daggers; betel-nut cracker, cocoa-nut grater; sandles and shoes from Malacca and Singapore; nests of baskets, rattan, and bugis mats, from Borneo and Celebes. Models—of a sampan, a description of boat peculiar to Singapore, and remarkable for its swiftness, both with sails and oars; of a bugis, or trading prahu; of a pirate prahu of Mindanas, carrying a crew of sixty men.

Batavia, Labuan, and Sarawak also contribute to the

Exhibition many choice and curious articles of utility and luxury.

From Ceylon, we have some ingenious models of coffee-pulpers and fanners, land-pressers, drills, and other singular agricultural implements; samples of coffee in all its various stages of preparation. The famous masticatory betel, composed of areca nut, betel-leaf, and lime in its various stages of preparation; ghee, or clarified butter, specimens of lacker-painting, in which they excel, dresses of the priests and natives, and a Singalese book, made of the leaves of the talipot palm, confined by boards, and the iron style used for writing.

By far the most valuable article exhibited, is the celebrated Koh-i-Noor diamond, which is computed to be worth £2,000,000 sterling. If, when discovered in 1550, its value was calculated at one million, that one million, at compound interest of only three per cent., would have doubled fifteen times in 1850, and the amount of the accumulation would now be thirty-two thousand seven hundred and sixty-eight millions sterling. But, in India, money could always command three times that amount of interest. If invested there, what might have been the amount, even at a much reduced original valuation? The Pitt diamond, bought in 1717 by the Regent Orleans for £125,000, would, if valued at a compound interest at 3 per cent., be worth at this day 8 millions sterling; and, if valued at 5 per cent., be worth 64 millions. It would not now, perhaps, fetch its original price. Such is the difference between inert and active property.

From South Australia there is a fine collection of specimens from the great Burra Burra copper-mine, consisting of blocks of the richest red oxides, blue carbonates, malachites, &c., from the various shafts of different depths. A block of red oxide, studded with native copper, and presenting also malachite and blue and green crystals. Several pieces of ornamental malachite, rough and polished. Several specimens of red oxide from a lode recently discovered in Stocks' shaft, of very high produce, estimated at 70 per cent. A block of blue carbonate, named the punch-bowl, having a diameter of 2 feet

THE GREAT EXHIBITION PALACE,

As seen from the Serpentine.

6 inches, by 1 foot 9 inches, and weighing between 2 cwt. and 3 cwt. The natural hollow in the centre is studded with the most brilliant crystals of different shades. Specimens of native virgin copper, in lumps weighing from two to six ounces.

From New Zealand, we have specimens of her flax (*Phormium tenax*), some of the native fabrics from it, and a reticule by Miss King, of New Plymouth, of a variety of beautiful woods, manufactured in that country into articles of furniture; and of copper-ore, sulphur, iron-sand, kauri gum, and Waikato coal. Also, a very beautifully-constructed model of a New Zealand war pah, accurately and elaborately prepared as it is.

LONDON GUIDE.

In furnishing our readers with a compendious guide for London, we have endeavoured to include everything likely to be visited by strangers. We shall begin with the places of amusement.

THEATRES.

Her Majesty's Theatre, or the Opera House, Haymarket, for the performance of operas, ballets, and divertissements. Open from March to August. Doors open at half-past seven o'clock, performances commence at eight o'clock. Except in the gallery, visitors are required to be in evening costume —frock coats and coloured trousers being inadmissible. Stalls, one guinea; pit, half a guinea. At the music-shops, tickets are sometimes offered at lower prices.

Royal Italian Opera, formerly Covent Garden Theatre, Bow Street, Covent Garden, lately opened in opposition to Her Majesty's Theatre, for like performances, during the same season, at the same hours and prices.

Drury Lane Theatre, Brydges Street, Strand.

Haymarket Theatre, in the Haymarket, opposite the Opera House. Doors open at half-past six o'clock, performances commence at seven. Boxes and stalls, five shillings; pit, three shillings; galleries, two and one shilling.

Royal Lyceum Theatre, Wellington Street North, Strand. Doors open at half-past six o'clock, performances commence at seven. Dress boxes, five shillings; upper boxes, four shillings; pit, two shillings; gallery, one shilling.

Adelphi Theatre, Strand, opposite the Adelphi Buildings. Doors open at half-past six o'clock, performances begin at seven. Stalls, five shillings; boxes, four shillings; pit, two shillings; gallery, one shilling.

St. James's Theatre, King Street, St. James's, for the performance of French plays. Doors open at half-past six, performances begin at seven. Stalls, half a guinea; boxes, seven shillings; pit, three shillings; gallery, two shillings.

Royal Princess's Theatre, Oxford Street, now under the management of Charles Kean. Doors open at half-past six o'clock, performances begin at seven. Stalls, six shillings; dress boxes, five shillings; upper boxes, four shillings; pit, two shillings; gallery, one shilling.

Olympic Theatre, Wych Street, Strand. Doors open at half-past six o'clock, performances begin at seven. Boxes, three shillings; pit, one shilling and sixpence; gallery, sixpence.

Strand Theatre, 168, Strand. Doors open at half-past six o'clock, performances begin at seven. Stalls, four shillings; boxes, three shillings; pit, one shilling; gallery, sixpence.

Sadler's Wells Theatre, New River Head, Islington. Doors open at half-past six o'clock, performance begins at seven. First circle boxes, three shillings; second, two shillings; pit, one shilling; gallery, sixpence.

Royal Surrey, St. George's Circus, Blackfriars Road. Doors open at six o'clock, performances begin at half-past six. Boxes, two shillings; pit, one shilling; gallery, sixpence.

Victoria Theatre, Waterloo Bridge Road, Lambeth. Doors open at six o'clock, performances begin at half-past six. Boxes, one shilling; pit, sixpence; gallery, threepence.

Astley's Royal Amphitheatre, Westminster Bridge Road. Doors open at half-past six, performances begin

at seven. Boxes, four shillings; pit, two shillings; gallery, one shilling; upper gallery, sixpence.

New English Opera House, 73, Dean Street, Soho. Doors open at half-past six, performances begin at seven. Boxes, two shillings and sixpence; pit, one shilling and sixpence; gallery, one shilling.

Queen's Theatre, Tottenham Street, Tottenham Court Road. Doors open at six, performances begin at half-past six. Boxes, two shillings; pit, one shilling; gallery, sixpence.

Marylebone Theatre, Church Street, Paddington. Doors open at half-past six, performances begin at seven. Stalls, three shillings; boxes, two shillings; pit, one shilling; gallery, sixpence.

City of London Theatre, Shoreditch. Doors open at a quarter-past six o'clock, performances begin at a quarter-past seven. Private boxes, two shillings; dress circle and stalls, one shilling and sixpence; lower circle, one shilling; gallery, sixpence.

Grecian Saloon, Eagle Tavern, City Road. One shilling admission.

Britannia Saloon, High Street, Hoxton. One shilling and sixpence admission.

CONCERT ROOMS.

The chief places at which *Concerts* are given are Hanover Square Rooms, Hanover Square; St. Martin's Hall, Long Acre; Willis's Rooms, King Street, St. James's; Crosby Hall, Bishopsgate Street; Music Hall, Adelaide Street, Strand; Exeter Hall, Strand, chiefly devoted to meetings, and the uses of benevolent and religious societies, and to concerts of sacred music, which take place in the great hall, one hundred and thirty feet in length, ninety feet broad, and forty-eight feet in height, with an arched roof.

EXHIBITIONS.

The Colosseum, Regent's Park, is similar in design, and nearly as large, as the Pantheon at Rome; and is one hundred and thirty feet in diameter, by one hundred and ten feet in height; polygonal in form, surmounted by a

glazed cupola. In front is a portico, with six large fluted columns, of the Grecian-Doric order, supporting a bold pediment.

The exhibitions offered to the public in this building are a Museum of Sculpture, containing admirable specimens by several of the most eminent artists of Europe, colossal statues, minor figures beautifully wrought, and busts of eminent persons. In the centre of this apartment is an immense organ, performances on which take place during the afternoon and evening. The Panorama of the Lake of Thun in Switzerland, painted in *tempera*. The Conservatories, piled with flowers and shrubs, multiplied by the introduction of looking-glasses, in which is introduced a Gothic aviary, peopled with a variety of birds of bright plumage, and the Temple of Theseus. The Swiss Cottage, and with mountain scenery. Open daily from half-past ten till five o'clock, and in the evening from seven till half-past ten, with music. Admission, two shillings.

The Cyclorama, in Albany Street, Regent's Park, is an exhibition of singular novelty and attraction, consisting of a Panorama of Lisbon, the Scenery of the Tagus, and the Earthquake of 1755. The dioramic effects of shade and colour are very beautifully varied, and the moving parts of the picture contrived with great cleverness, to reproduce the appalling scene in all its attractive horrors. Open daily at two and half-past three o'clock; and in the evening at half-past seven and nine o'clock. Admission, one shilling; reserved seats, sixpence extra.

The Diorama, Regent's Park. It differs from the Panorama in this respect, that instead of a circular view of the objects represented, it exhibits the whole picture at once in perspective; and it is decidedly superior, both to the Panorama and Cosmorama, in the fidelity with which the objects are depicted, and in the completeness of the illusion. Open daily, from ten till six o'clock. Admission, two shillings.

Burford's Panorama, in Leicester-square. This exhibition is the oldest establishment of the kind in London, having been originally opened in 1790. One of the pre-

sent subjects is a painting of the Arctic Regions, from drawings taken by Lieutenant Browne, R.N., of H.M.S. *Enterprise*, and presented to Mr. Burford by the Admiralty: the others are the Lakes of Killarney, and the ruins of Pompeii. The views are open from ten o'clock till dusk. Admission, one shilling each view; or two shillings and sixpence to the three.

Diorama of Australia, at the Western Institution, Leicester-square. This consists of a series of views, illustrative of emigrant and convict life in Australia, and shows the peculiar features of its landscape scenery, with views of Sidney, Port Jackson, Hobart Town, Port Arthur, Norfolk Island, &c.; the whole being accompanied with a descriptive lecture. Open daily, at three and eight o'clock. Admission, one shilling.

The Gallery of Illustration, 14, Regent-street. This exhibition consists of a Diorama of the Overland Route to India, representing the journey from Southampton to Calcutta. Calshot Castle, the Isle of Wight, the Needles, the Bay of Biscay, Cintra, Cape St. Vincent, Cape Trafalgar, and Tarifa, are successively shown to the spectator, when the scene closes, and a stationary view of Gibraltar is represented. The voyage is then continued to Malta, of which there is another stationary picture. Alexandria, the Nile, Cairo, the Desert, and Suez, are objects in a third stage of the Diorama: and the last, after exhibiting the Maldives, Ceylon, and Madras, terminates with a view of Calcutta. Open daily, at twelve, three, and eight o'clock. Admission, one shilling; stalls, two shillings and sixpence; reserved seats, three shillings.

Diorama of our Native Land, illustrative of England and its seasons; Gallery of Illustration, 14, Regent-street, Waterloo-place, Pall-mall. In this exhibition will be found an attempt to depict the amusements and employments of a country life during the several varieties of spring, summer, autumn, and winter. Open daily. Admission, one shilling.

New Oriental Diorama, Willis's Rooms, King-street, St. James's. Illustrative of Life and Scenes in India. Open on Mondays, Wednesdays, and Saturdays, at two

o'clock and eight. Admission: front seats, two shillings and sixpence; back seats, one shilling.

The Cosmorama, 209, Regent-street. Present delineations of the celebrated remains of antiquity, and of the most remarkable cities and edifices in every part of the globe. Open daily, from ten till six o'clock. Admission, one shilling.

Fremont's Panorama of California, Egyptian Hall, Piccadilly. A moving Diorama of Fremont's Overland Route to Oregon, Texas, and California. Open daily, at half-past two and a quarter before eight o'clock. Admission, one shilling.

Panorama of the Nile, Egyptian Hall, Piccadilly. This grand moving Panorama of the Nile gives as perfect a representation of the various localities as can be effected by any pictoral display. Open daily: afternoons at three o'clock; evenings at eight o'clock. Admission: stalls, two shillings; pit, one shilling; gallery, sixpence.

Her Majesty's Visit to Ireland, Apollonicon Rooms, St. Martin's-lane. A moving Diorama, embracing the principal points of the Queen's memorable Visit to Ireland. Open daily, at three and eight o'clock. Admission, one shilling; reserved seats, two shillings.

Brees's Panorama, 393, Strand. A series of three panoramic views, illustrative of Ceylon, Calcutta, and Wellington, New Zealand; from drawings made on the spot, by S. C. Brees, Esq., C. E. Open daily, at one, three, half-past four, and half-past eight o'clock. Admission, one shilling; reserved seats, two shillings; stalls, three shillings.

Panorama of New Zealand, Linwood Gallery, 6, Leicester-square. This Panorama gives the visitor a truthful idea of this very beautiful country; mountains covered with magnificent trees, alternate with plains, clothed in crimson bloom, watered by numerous streams, where the flax-plant grows abundantly, and its palm-like ferns reach the astonishing height of 40 feet.

Panoramas of Adelaide and the Brazils are also exhibited here, in connection with the panorama of New Zealand, all of which are from Mr. Brees's designs, and

have been painted by eminent scenic artists. Their accuracy may be fully relied upon, the surveys having been taken for railway purposes. Open daily, at twelve, three, and eight o'clock. Admission to the three: stalls, three shillings; lower seats, two shillings; gallery, one shilling.

Panorama of Constantinople, Polyorama, 309, Regent-street, adjoining the Royal Polytechnic Institution. It is divided into two parts; the first showing the Bosphorus, the Dardanelles, and the exterior of Constantinople; and the second conducting the spectator into the interior of the city. Open daily, at twelve, three, and eight o'clock. Admission, one shilling; stalls, two shillings and sixpence; reserved seats, three shillings.

Exhibition of Art, adjoining the Adelaide Gallery, Lowther Arcade, Strand. A curious and costly collection of mechanical singing-birds and animals, which by means of complicated machinery imitate their natural movements, an automaton female organist playing a variety of tunes; flowers that open and close, as is their wont, in the morning and evening; various mechanical and musical clocks; some miniature waxen busts of departed British worthies; and a process of egg-hatching by artificial means. The walls of the various rooms are hung with tapestry, representing Scripture and other subjects. There is likewise a series of cosmoramic views, displaying the private apartments in Windsor Castle, and some interesting continental scenes. Open daily: morning, from eleven till five; evening, seven till ten. Admission, one shilling.

Portland Gallery, 316, Regent-street, opposite the Polytechnic Institution. A grand moving diorama, in two parts, in which the spectator is taken through Upper India from the point at which the Diorama of the Overland Route terminates. Open daily, at half-past two and half-past seven. Admission, one shilling; reserved seats, two shillings and sixpence.

Royal Polytechnic Institution, 309, Regent-street, near Portland-place. The exhibition consists for the most part of mechanical and other models, distributed through various apartments; there is a hall, devoted to manu-

facturing processes, a laboratory beneath, a theatre or lecture-room above, a very spacious hall, and other apartments. Open daily, from ten till five o'clock, and from seven till ten o'clock. Admission, one shilling.

South African Exhibition, Chinese Gallery, Hyde-park-corner. A highly interesting collection of trophies connected with the chase, procured during a five years' residence in the interior of South Africa, by the prowess and indomitable daring of the proprietor, Gordon Roualeyn Cumming, Esq. Open daily. Admission, one shilling.

Cantelo's Hydro-Incubator, Leicester-square, exhibits the whole process of Incubation, from the first microscopic speck of existence until it emerges a beautiful and perfect little bird. Open daily, from ten o'clock in the morning till ten at night. Admission, one shilling.

Madame Tussaud's Exhibition Bazaar, Baker-street, containing an immense and celebrated collection of Wax Figures. Open daily, from 10 a.m. till 10 o'clock p.m. Admission, one shilling.

Catlin's Exhibition, 6, Waterloo-place, Pall-mall, illustrative of Savages and Savage Life in North America. Open daily, from 9 till 6. Admission, one shilling.

The Chinese Junk, Temple-pier, Essex-street, Strand. Open daily. Admission, one shilling.

MUSEUMS, GALLERIES OF ART, ETC.

The British Museum, Great Russell-street, Bloomsbury. In this great National Institution, which has been recently rebuilt, the principal divisions are,—the Entrance-hall; the King's Library; Central Hall; Natural History Department, divided into five galleries; Eastern Zoological Gallery; Gallery of Antiquities; Lycian Room; Elgin Saloon; Mummy Room; and the Great Library. Persons applying for the purposes of study or research, are admitted to the reading-rooms every day, from nine o'clock in the morning until four in the afternoon, between the 7th of September and the 1st of May; and until seven o'clock in the evening, between the 7th of May and the 1st of September. Artists are admitted to study in the galleries of sculpture between

the hours of nine and four o'clock, every day except Saturday. The Museum is closed from the 1st to the 7th of January, the 1st to the 7th of May, and the 1st to the 7th of September, inclusive; on Ash-Wednesday, Good Friday, and Christmas Day; and also on special Fast, or Thanksgiving Days, ordered by authority.

East-India Museum, East-India House, Leadenhall-street. This valuable collection is principally devoted to curiosities or articles of *virtu* from the East, including many of the trophies that graced the arms of the troops of the Honourable East-India Company. Open to visitors on Tuesdays and Thursdays, by order of any Director of the Company; and on Saturdays, from ten till four o'clock, without any restriction.

Museum of Economic Geology, 28, Jermyn-street, Piccadilly. The collections comprise alike illustrations of the geology of the United Kingdom and its colonies, and of the application of that science to the useful purposes of life, numerous models of mining works, mining machinery, metallurgical processes, and other operations, with needful maps, sections, and drawings, aiding a proper and comprehensive view of the subject. Open daily, from ten till four o'clock. Admission, free.

United Service Institution, Scotland-yard, Whitehall. Established as a central repository for objects of professional art, science, and natural history; and for books and documents relative to those studies, or of general information. Open daily (Saturdays excepted), from eleven till five o'clock in the summer. Admission by tickets, to be obtained from members.

Society of Arts, John-street, Adelphi. This important society was instituted in 1754, in pursuance of a plan formed in the preceding year, for the purpose of exciting emulation and industry in the improvement of ingenious and commercial arts, the various branches of agriculture, &c., by honorary and pecuniary rewards, as may be best adapted to the case, for the communication to the Society, and through its medium to the public, of all such useful inventions, discoveries, and improvements, as tend to that purpose. In pursuance of this plan, the Society has ex-

pended upwards of £100,000, derived from voluntary subscriptions and legacies. The Museum contains a large and varied collection, illustrative of the progress of the arts for the last ninety years; and in the Meeting-room are Barry's celebrated pictures. Within the last few years this Society has evinced an increased activity, and by an annual exhibition of pictures by some celebrated modern artist, have produced an exhibition alike honourable to native talent and tending to the improvement of the public taste. We have already said, that it is to this Society we are indebted for the Great Exhibition. Open daily (except Wednesdays), from ten till three o'clock. Admission free.

The Soane Museum, 13, Lincoln's-Inn-Fields. One of the most unique and interesting collections in London, formed and founded in his own house, and bequeathed by Sir John Soane, in 1833, an Act of Parliament having been obtained to sanction its disposal in its present form. The Museum, which occupies a suite of twenty-four rooms, erected in 1812, is enriched with a choice collection of Grecian and Roman specimens of architecture, Etruscan vases, and Egyptian antiquities. Among the latter, being the gem of the collection, is the celebrated alabaster sarcophagus, brought by Belzoni from the ruins of Thebes, and purchased by Sir John Soane of Mr. Salt, in 1824, for £2,000. Open to the public every Thursday and Friday, from ten till five o'clock, during the months of April, May, and June; and on Tuesdays, from the first in February to the last in August, for trustees and their friends. Persons desirous of obtaining admission must apply a day or two previously, when tickets will be forwarded by post to their address. Foreigners and those unable to attend at these stated periods are admitted by special application.

Museum of Naval Models, Somerset House. A very extensive and highly-interesting collection of Naval Models, showing the progress of our naval architecture from the days of the Armada to the present time. Open daily. Admittance to be obtained by order, on application, from the Surveyor-General of the Navy, Sir William Symons.

London Missionary Museum, 7, Blomfield-street, Moorfields. A numerous collection, made by missionaries, of objects of natural history, and of idols and other symbols of heathen worship, in the region over which the care of the London Missionary Society extends, but principally from Asia and the South Sea Islands. Open daily from ten till five o'clock. Admission free.

Museum of the College of Surgeons, Lincoln's-Inn-Fields, south side. This magnificent museum of preparations, attached to the Royal College of Surgeons, is the first of its kind in the world, and owes its foundation to the untiring industry and talents of John Hunter, the great anatomist and physiologist, who devoted his life to collecting the most important specimens in those great branches of knowledge—Natural History, Comparative Anatomy, Physiology, and Pathology. The Museum is an extensive building, of noble proportions, and of an oblong form, with galleries surrounding it; and besides being the depository of the valuable collection of Hunter, it contains preparations of every part of the human body, in a sound and natural state, as well as a great number of deviations from the natural form and usual structure of the several parts. A portion of it is allotted to morbid preparations; and there are few of the diseases to which man is liable of which examples are not to be found. The whole collection amounts to upwards of twenty thousand specimens and preparations. Open to the public during the months of May and June, on Tuesdays and Thursdays, by leaving the name and address of the applicant previously.

Saull's Museum of Geology, 15, Aldersgate-street. A very interesting geological collection, made by W. D. Saull, Esq., F.S.A. Open on Thursdays, at eleven o'clock, Admission free. The proprietor usually explains personally to visitors the various phenomena, and developes some new views on the earth's motion.

Museum of London Antiquities, 5, Liverpool-street, Bishopsgate. It contains a large quantity of remarkable objects, illustrative of the condition of London in the time of the Romans, discovered during the past few years,

and collected and preserved by Mr. Roach Smith. May be seen by appointment.

Museum of the Asiatic Society, Grafton-street. A selection of very rare and choice Oriental specimens, illustrative of the arts, arms, economy, and antiquities of the eastern world. In the Meeting-room is a library, rich in Oriental, Persian, Chinese, and Sanscrit MSS., and other works; and cases containing a variety of curious specimens. Above the cases are models, of a singular series, illustrative of Hindoo manners, all in different characteristic attitudes. There is also a small collection of minerals, natural history, and remnants of sculpture; also an Armoury, with a large collection of warlike instruments, from Bengal, Assam, Malabar, Malay, and New Zealand. Open to visitors, on Tuesday, Wednesday, and Thursday, from eleven till four o'clock. Orders are easily obtainable at the rooms, in Grafton-street.

Entomological Museum, at the rooms of the Entomological Society, 17, Old Bond-street. The collection is very extensive; the number of individual specimens may be stated at about thirty thousand. Open for the inspection of members and their friends, every Tuesday, from twelve till four o'clock.

Zoological Museum, 11, Hanover-square. The Museum is rich in subjects of natural history. Open daily, from ten till five o'clock. Admission, by ticket, obtainable from members.

Museum of the Royal Institution, 21, Albemarle-street. An extensive cabinet of minerals. Open daily, from ten till four o'clock. Admission by member's order.

National Gallery, Trafalgar-square. Founded by Parliament, in 1824, and the present building erected between 1832 and 1836, from designs by W. Wilkins, Esq., R.A., at a cost of £96,000, and is nearly 500 feet in length. The portion of the building to the right side of the portico is devoted to the Royal Academy; and that to the left to the National Gallery; the two being connected by the grand staircase and vestibule, dividing the building into two equal parts, an arrangement whereby the efficiency

of both institutions is seriously diminished. The Gallery, which originated in the purchase, by government, in 1824, of Mr. Angerstein's collection of thirty-eight pictures, for £57,000, has been subsequently increased by purchase and donations, until it now possesses 215 pictures. Open on Monday, Tuesday, Wednesday, and Thursday, to the public generally: and on Friday and Saturday to artists only; from ten till six o'clock, during the months of May, June, July, August, and the two first weeks in September. Admission free.

Vernon Gallery, Marlborough House, Pall-mall. The Vernon Pictures, by English masters, are placed in a suite of eight rooms on the ground-floor, until a suitable provision for them can be made in the National Gallery. On entering the mansion from the court-yard, the visitor ascends a short flight of steps, into the noble hall, the ceiling of which, with the exception, perhaps, of that of Whitehall, is the finest in the kingdom, being decorated with the paintings which Gentileschi painted for Charles I., and which were originally in the palace at Greenwich. In the hall stands Gibson's beautiful group of Hylas and the Nymphs, and the busts bequeathed by Mr. Vernon with the paintings, as also a bust of that gentleman, purchased by subscription, and presented to the Gallery. The entrance to the picture-gallery is from the right-hand corner of the hall. The first two rooms are filled with English pictures belonging to the National Gallery, which are here seen to far greater advantage than in their old abode. The other six rooms contain the Vernon pictures; and as they are hung generally in only two lines, they are seen to great advantage. Open under the same regulations as the National Gallery.

Royal Academy, Trafalgar-square, was instituted by Royal Charter, in 1768. It consists of forty members, including a president, called Royal Academicians, twenty associates, and six associate engravers. The Academy possesses a collection of casts and models from the antique, a school of colouring, copies by Sir James Thornhill from the cartoons of Raphael, at Hampton Court, and those from Rubens, &c., also the probationary pictures or sculp-

tures presented by the members of the Academy on their election.

The Royal Academy derives the whole of its funds from the produce of its annual exhibition. The annual exhibition opens the first Monday in May, and continues open daily until the end of July, from eight o'clock till seven. Admission, one shilling.

British Institution, 53, Pall-mall, established in 1805, on a plan formed by Sir Thomas Bernard, for the purpose of encouraging British artists, and affording opportunities of exhibiting historical subjects to a greater advantage than in the rooms of the Royal Academy, then exhibited at Somerset House. The gallery purchased for its use was erected by Alderman Boydel, for the exhibition of paintings for his edition of Shakspeare, and it is well suited for its present purpose. Over the entrance is a piece of sculpture by Banks, representing Shakspeare, accompanied by Painting and Poetry. Open in February, March, and April, for the exhibition of works by British artists; and in June, July, and August, for the exhibition of paintings by old masters. Admission, one shilling.

Society of British Artists, Suffolk-street, Pall-mall East. Instituted in 1823, for the annual exhibition and sale of works of living artists, in the various branches of painting, sculpture, architecture, and engraving. Incorporated by Royal Charter in 1846. It is not an exclusive society, but admits the works of living artists generally, for exhibition and sale. Open daily during the months of April, May, June, and July, from nine o'clock till dusk. Admission, one shilling.

Society of Painters in Water Colours, Pall-mall East. Established in 1804, for the purpose of giving due importance and encouragement to an interesting branch of art, which had not then sufficient prominence assigned to it in the exhibitions of the Royal Academy. Open daily during the months of May, June, and July. Admission, one shilling.

New Society of Painters in Water Colours, south side of Pall-mall. Established in 1825, with similar objects to the parent society. Many distinguished artists, not

included in the older society, exhibit annually their works here. Open daily, during the months of April, May, June, and July. Admission, one shilling.

The National Institution for the Exhibition of Modern Art, Portland Gallery, 316, Regent-street. An annual exhibition of paintings in oil and water-colours, and sculpture, by members of the Association to promote the free exhibition of Modern Art, which now numbers upwards of one hundred members. Open daily during the months of May, June, July, and August, from nine o'clock till dusk. Admission, one shilling.

Architectural Exhibition, 54, Pall-mall. An attempt to supply a want, that had long been felt, for an adequate representation of this interesting branch of the fine arts: the neglect with which architectural subjects have been treated in the Royal Academy, having led to the foundation of this exhibition. Open daily during the months of August and September. Admission free.

Dulwich Gallery, Dulwich College, situated about five miles from the bridges, and easily reached by omnibus from Fleet-street, or Gracechurch-street. The picture-gallery contains the collection of paintings bequeathed by Sir Francis Bourgeois to the College, and is particularly rich in the works of Cuyp, Murillo, Nicholas Poussin, Wouvermans, and other masters of the Dutch school, with a few subjects by the amateur donor himself. The pictures which form this interesting gallery were originally collected for Stanislaus, King of Poland; in consequence, however, of the dismemberment of Poland, and the subsequent death of the King, many of these pictures remained in the hands of Mr. Desenfans, the collector of them, who bequeathed them to Sir Peter Francis Bourgeois, Kt., R.A., who in his turn bequeathed them to Dulwich College, as a permanent institution for the gratification of the British nation, with £12,000 to build a suitable gallery, where they could be seen by the public. Open daily (except Friday and Sunday); hours of admission, from April to November, from ten till five; and from November to April, from eleven till three. Tickets may be obtained, gratis, of Messrs. Graves and Co.,

Pall-mall East; Mr. Carpenter, Old Bond-street; Mr. Leath, St. Paul's Churchyard; Mr. Moon, Threadneedle-street; Messrs. H. Leggatt and Co., Cornhill; and Messrs. Ackerman and Co., 96, Strand.

The Naval Gallery, Greenwich Hospital. A collection of portraits of celebrated admirals, and of paintings illustrative of the naval prowess of England, presented or bequeathed by George IV., William IV., and other distinguished individuals, and deposited in the Painted Hall, and an adjoining room. Open every week-day, from ten till seven, during the summer months; and from ten till four in the winter; and on Sunday, after Divine Service, in the morning. On Monday and Friday open free; and on other days on payment of two-pence.

PUBLIC GARDENS AND PARKS.

Zoological Gardens, Regent's-park, are of great extent and beauty, and are superior to any other for the same purpose in the world. The grounds are extensive and tastefully disposed, and possess horticultural attractions in no mean degree; they are so laid out as to best suit the numerous animals located within them, and at the same time with an unfailing attention to the picturesque beauty of the general arrangement. Dispersed throughout the grounds are numerous graceful buildings, admirably adapted for the wants of their various inmates. The collection of rare and beautiful animals, on the 1st of January, 1850, consisted of living animals—354 mammalia, 853 birds, and 154 reptiles. The different animals are exhibited in paddocks, dens, and aviaries, suited to their several habits. Open daily, from nine o'clock A.M. to sunset. On Sundays, to Fellows only. Admission one shilling; on Mondays, sixpence. The Society's Rooms are at No. 11, Hanover-square.

Surrey Zoological Gardens, Manor-place, Walworth, were originally formed by Mr. Cross, who removed hither the whole of his splendid collection of animals on the demolition of Exeter 'Change. The grounds occupy about fifteen acres. The South London Horticultural Society hold here several exhibitions of flowers and fruit

during the season. Open daily. Fireworks on Monday, Tuesday, Wednesday, and Thursday. Admission, one shilling.

Vauxhall Gardens, on the Surrey side of Vauxhall Bridge, easily reached by steamboat from any of the river piers, or by the South-Western Railway from the Waterloo Station. This popular place of resort occupies more than six acres of ground, laid out in groves, grottos, covered arcades, and temples, illuminated with myriads of coloured lamps. On the right of the entrance, lighted up with variegated lamps, distributed among the foliage of the trees, and festooned in all conceivable varieties of form, is the grand quadrangle, formed by four colonnades, which enclose an open space surrounded with walks and planted with trees, called the Grove; in the centre of which is the lofty orchestra, a Gothic temple, glittering all over with many-coloured lights, and at the outer extremity are boxes for the accommodation of supper-parties; facing the orchestra is a pavilion of the Composite order, sixty feet in length, called the Prince's Gallery. The Rotunda is a room sixty feet in diameter, fitted up as a theatre, and capable of accommodating nearly two thousand persons, where ballets and light theatrical performances take place, and vary the evening's entertainment. The Gardens generally open in May, and close at the end of August. The amusements consist of vocal and instrumental music, rope-dancing, ballets, and horse-riding in the Rotunda, together with dioramic exhibitions and balloon ascents. The doors open at seven o'clock. The entertainments are closed by a grand display of fireworks at eleven o'clock. The concert takes place at eight o'clock. Suppers, wines, and every other description of refreshment may be had in the Gardens, the prices of which are affixed to each box. Admission, two shillings and sixpence.

Cremorne Gardens, Chelsea, are situated on the north bank of the Thames, just above Battersea Bridge. These grounds are completely surrounded by numerous lofty forest trees, and consist of open glades or lawns connected with each other in a very agreeable manner. The enter-

tainments at these Gardens are of a similar character to those of Vauxhall; and, from the more open situation of Cremorne, it has become a very popular place of resort. In the grounds is a handsome yet fantastic Chinese Orchestra, where concerts of vocal and instrumental music are performed. The Rotunda is fitted up as a theatre, and capable, with its galleries, of accommodating nearly two thousand persons. On the right of this is a spacious lawn, many acres in extent, from whence day and night balloon ascents are made, and where archery is daily practised. In front of the theatre is an erection for the display of fireworks, which usually concludes the evening's amusements. Among other novelties a series of aquatic tournaments are held during the season, in front of the river esplanade. Open daily during the summer months. Admission, one shilling.

Flora Gardens, Wyndham-road, Camberwell. A suburban pleasure-garden, of considerable extent, in which, during the summer season, takes place nightly a vocal and instrumental concert, succeeded by a display of fireworks. It may be easily reached by the Camberwell or Kennington omnibuses. Open daily. Admission, sixpence.

St. Helena Gardens, Lower Deptford-road, Rotherhithe. The grounds are interspersed with bowers, alcoves, and shady arenas. The grand hall is capable of accommodating one thousand persons, in which vocal and instrumental concerts take place nightly throughout the week. Open daily. Gala nights, Monday and Tuesday. Admission, sixpence.

St. James's Park, though not the largest, is far the most beautiful of our London parks. It is laid out and planted with very great effect. In the centre is a long sheet of water, indented with little bays, with jutting promontories, and islands tufted with evergreens. The collection of rare aquatic birds, which add greatly to the beauty of the scene, and the feeding of which is a never-failing source of amusement to the young, belong to the Ornithological Society, who have erected a very pretty and picturesque cottage for the keeper at the east end of the Park. The collection, upwards of three hundred

birds, includes twenty-one species and fifty-one distinct varieties. The eastern entrance to the Park is through the Horse Guards, between which and the inner inclosure is a large parade, on which one of the regiments of Foot Guards makes a display every morning between ten and eleven o'clock, and afterwards proceeds to relieve the regiment on duty at St. James's Palace, where the bands of both regiments play alternately for about twenty minutes. On the parade are placed a Turkish piece of ordnance, captured at Alexandria by the British army; a piece of ordnance captured at Waterloo; and one of the mortars used by the French army to throw shells into Cadiz, its range being said to be three miles, and its weight sixteen tons. The entrance on the north side is by the Duke of York's Column, from Pall-mall, down a flight of broad steps. This side of the Park is bounded by a range of stately houses, built on what was formerly the site of Carlton Palace, consisting of sixteen houses, which are disposed in two ranges, raised on a substratum forming a terrace, about fifty feet wide, adorned with Pæstum Doric pillars, surmounted by a balustrade, and by Marlborough House, St. James's Palace, Stafford House, and a portion of the Green Park. On the west is the great entrance down Constitution-hill, between which and Buckingham Gate stands the Palace. The eastern side is bounded by the Birdcage-walk, leading from Pimlico to Westminster Bridge. On the outer side of this walk are the Wellington Barracks, a handsome Doric chapel for the soldiers, and back fronts of many stately private dwellings. Open daily from sunrise to sunset.

The Green Park, situated between St. James's Park and Piccadilly, is an open area of about sixty acres. Through it run gravel walks in various directions; and at the north-eastern corner is a large reservoir surrounded with an iron railing. Along its eastern side are many of the most magnificent mansions of this great metropolis. The entrance to the Park from Piccadilly, which also forms one of the grand approaches to St. James's Park and Buckingham Palace, and of which,

from the lowness of their situation, a fine view may be obtained, is by a triumphal arch of the Corinthian order, on the northern front of which are four columns, supporting a portico, the arch itself being adorned with six Corinthian pilasters; the southern front is nearly similar; the vaulted part in the centre is divided into richly carved compartments, and the gates, which are of beautifully bronzed iron-work, are adorned with the royal arms; and on the summit of the arch is placed the colossal bronze statue of the Duke of Wellington.

Hyde Park is situated at the western extremity of London, and, together with Kensington Gardens, occupies the whole space between the Kensington and Bayswater roads; it is separated from the Green Park by the width of the street at Hyde-park-corner, and has long been the favourite resort of the fashionable world; it is an extremely delightful spot, containing within its precincts about four hundred acres, and is very well planted, though with few of the effects of landscape-gardening; it derives its name from the Manor of Hyde, given in exchange to Henry VIII. for other lands, at the suppression of the monastery. It has been greatly reduced in size by the building of houses, and by the appropriation of a part to enlarge Kensington Gardens; it is, however, still large, and, from the salubrity of the air, has been happily called one of the "lungs of London." The views from the higher portions of ground are very pleasing, more particulary those to the south and west. A piece of water, once serpentine, and still called the Serpentine River, though now a wide canal, stretches through the Park with a single course from north to east, having at its eastern extremity an artificial waterfall, and, being crossed towards its western end by a very elegant stone bridge, forming a beautiful object from either side. The Serpentine is much resorted to during the summer months for the purpose of bathing, but the numerous cold springs with which it abounds render it very dangerous, the swimmer being often seized with cramp, from which cause great loss of life ensued, previous to the establishment of the Royal Humane Society, who have erected a house on

its margin for the reception and recovery of persons apparently drowned, and who have several men engaged during the hours in which bathing is allowed. In winter, during hard frosts, the Serpentine is much frequented by the votaries of skating, although it is the most dangerous sheet of water in London, and numbers have fallen victims to their hardihood, in venturing within the limits marked "dangerous." Near the Receiving-house are two powder-magazines—the great Government store of gunpowder, in which is deposited upwards of one million rounds of ball and blank cartridges ready for immediate use. At present, however, the great point of attraction in this Park is the Crystal Palace.

Regent's Park is situated on the north side of the West-end, between the New-road and Hampstead. It is nearly of a circular form, and consists of four hundred and fifty acres, laid out in shrubberies, adorned with a fine piece of water, and intersected with roads, which are most delightful rides or promenades in fine weather. There is also an artificial lake, over which are thrown some neat suspension-bridges. Around this park are many magnificent terraces of private mansions, villas, and a few public edifices, as the Colosseum, St. Catherine's Hospital, &c., and within the enclosures are several private villas, and the gardens of the Zoological Society, and the Royal Botanic Society. The Park is entered by a number of gates, some of which are handsome.

Victoria Park is situated in Bishop Bonner's-fields, Bethnal-green. It was first opened in 1847, for the recreation of the inhabitants of the east side of London. Its extent is about two hundred and ninety acres. The entrance-lodge, and house of the superintendent, is a handsome building, in the Elizabethan style, and forms, altogether, a pretty, picturesque, but not very solid-looking structure. The Park has been most admirably laid out; upwards of twenty thousand trees and shrubs having been planted; and as the plan of a scientific arboretum is followed in their disposal, it combines amusement and instruction of a high order; and in a few years will, no doubt, become one of the chief ornaments of that part of the metropolis.

Battersea Park, at present in the course of formation, will extend the whole distance between Battersea Bridge and Nine Elms, and from the bank of the river to the public road across Battersea-fields, making the length of the Park about two miles and a quarter, and its width a little more than a mile. A carriage-drive, fifty feet in breadth, will be formed along the bank of the Thames, and a suspension-bridge be thrown across the river at the spot where the Red House now stands.

The Temple Gardens are pleasantly situated on the bank of the Thames, and are open to the public from sunrise till dusk during the summer months.

The Royal Botanic Garden is in the Inner-circle, Regent's-park; its principal entrance faces the York Gate. It contains about eighteen acres, but the grounds have been laid out with so much skill, that it appears of very much greater extent. They are beautifully diversified by hill and dale, rural retreats, and winding walks. The conservatory, or winter-garden, encloses an area of one hundred and seventy-five feet in length, and seventy-five feet in breadth; it is a source of great attraction to the visitor, and is capable of accommodating two thousand persons.

Three exhibitions are held annually, in the months of May, June, and July, when nearly 300 medals are distributed, varying in value from twenty pounds to fifteen shillings. Admission may be obtained by a Fellow's order.

Chelsea Botanical Garden, established in 1676, by the Company of Apothecaries, as a physic garden.

Chelsea Hospital Gardens.—The grounds and gardens of the hospital, on the south side, form a very interesting promenade, especially during the summer season; the centre walk of lime-trees, and the terrace bounded by the Thames, commanding all the diversified attractions of that portion of the river, being freely opened to the public daily.

ROYAL PALACES.

The Palace of Westminster, or the new Houses of Parliament, between Westminster Bridge and the Abbey,

when completed, will be by far the finest of our public buildings.

Buckingham Palace, St. James's-park, is the town residence of her Majesty. The new façade has more the appearance of a row of modern second-rate mansions, than the palace of the sovereign of this wealthy and powerful empire. In the centre of the façade is an arch, with a balcony, supported by bold trusses, surmounted by scroll-work, and colossal figures of St. George and the Dragon, and Britannia with the British Lion, by Termouth. The principal, or garden front, is 345 feet in length, ornamented with statues of Prudence, Temperance, Fortitude, Faith, Hope, and Charity; and has a terrace of the like extent. Military trophies, and festoons of flowers are distributed over various parts of the building, where ornaments have been required to give effect.

The entrance-hall, though low, is magnificent; it is paved with variegated marble; the walls are of scagliola, and the ceiling is supported by forty-four white marble columns, with Corinthian capitals of Mosaic gold. Behind the hall is the sculpture gallery, extending the whole length of this portion of the palace. The sides of the gallery are ornamented with thirty-two columns, similar to those in the entrance-hall. In the centre is the door opening into the libraries, three handsome rooms, looking into the garden; on the right is the staircase leading to the Queen's private apartments; and on the left are the Queen's study, and rooms for secretaries. On the left of the entrance-hall is the grand staircase, recently decorated by Louis Gruner, the steps of which are of white marble, and the railings of mahogany and Mosaic gold, leading to the state apartments, which are in the following order:—

The green drawing-room, 48 feet by 35 feet, is hung with rich damask drapery, with bullion fringe, divided by gilt pilasters.

The throne-room, 65 feet by 35 feet, is richly gilt, and hung with crimson silk, beautifully blended with an excess of richly-gilt ornament; the ceiling is magnificently embossed, and the frieze contains *bassi-relievi*, by Baily, after

designs by Stothard, representing the wars of York and Lancaster. In an alcove at the end of the apartment, formed by two wall pillars, is the imperial throne, surmounted by a wreath, borne by winged figures, to which are attached a medallion, exhibiting the Royal initials. In this apartment the meetings of the privy council are held.

The picture gallery is 164 feet by 28 feet; and is lighted by three parallel ranges of skylights, decorated with tracery and Eastern pendants; over the mantelpieces are carved heads of the great masters of antiquity; and the floor is of panelled oak. The collection of pictures formed by George IV., consists principally of choice works of the Dutch and Flemish schools, a few valuable Italian paintings, and several meritorious pictures by modern English artists.

The yellow drawing-room is 48 feet by 35 feet, and the most magnificent room in the palace; the whole of the furniture being elaborately carved, overlaid with dead and burnished gold, and covered with broad striped yellow satin. Against the walls are placed several highly-polished syenite marble pillars, which are matched in colour by the carpet, subduing the effect of the masses of yellow. In each panel is painted a full-length portrait of some member of the royal family. There are also twelve bas-reliefs by the late William Pitts, representing the origin and progress of pleasure.

The saloon, which is in the centre of the garden front, is 32 feet by 52 feet. Here the decoration is particularly sumptuous; the shafts of the Corinthian columns and pillasters being of purple scagliola, in imitation of *lapis lazuli;* the entablature, cornice, and ceiling, profusely enriched; and all the other decorations and furniture of corresponding magnificence. In this apartment are the friezes, by Pitts, representing Eloquence, Pleasure, and Harmony.

The south drawing-room is 68 feet by 35 feet, enriched by columns of crimson scagliola, and three compositions in relief, by Pitts, being the apotheosis of Spenser, Shakspeare, and Milton.

The last of the state rooms, is the dining-room, 68 feet

by 35 feet, lighted by windows on one side only, opening into the garden, the spaces between which are filled with immense mirrors. At the southern end is a deep recess, the extremity of which is nearly filled by a large looking-glass, in front of which, during state balls or dinners, the buffet of gold plate is arranged, producing a most magnificent effect. The ceiling is enriched with elaborately moulded foliage and floral ornaments.

On the south-side of the garden front is the private chapel.

In the garden is the Queen's summer-house, adorned with frescoes, illustrating Milton's Comus, by Eastlake, Maclise, Landseer, Dyce, Stanfield, Uwins, Leslie, and Ross; the poverty-stricken ornaments and border of which are by Louis Gruner.

The state apartments may be viewed by an order from the Lord Chamberlain, only granted during the absence of Her Majesty.

St. James's Palace, Pall-mall, facing St. James's-street, is an irregular brick-building, without a single external beauty to recommend it, possessing, however, several apartments admirably adapted for state purposes, and used by Her Majesty for holding levees and drawing-rooms.

The state apartments are commodious and handsome, and are entered by a passage and staircase of great elegance. The first of which is very splendidly furnished; the sofas, ottomans, &c., being covered with crimson velvet, and trimmed with gold lace. The walls are covered with crimson damask and the window curtains are of the same material. The second room is fitted up in the same splendid style. The third room is called the presence chamber; in it Her Majesty holds levees and drawing-rooms; although similar in style of decoration, it is far more gorgeous than the two above. The throne, which is on a raised dais, is of crimson velvet, covered with gold lace, surmounted by a canopy of the same material. The state chair is of exquisite workmanship. The window curtains are of crimson satin trimmed with gold lace. Behind this apartment, is Her Majesty's closet, in which

audience is given to foreign ambassadors, cabinet ministers, and officers of state; and beyond this is Her Majesty's attiring-room.

The chapel royal has a choral service at twelve o'clock, at which when in town, the Duke of Wellington is a regular attendant. By being early, admission may be obtained by a gratuity to the attendant; a system, in connection with churches, which is happily on the decrease.

In the colour-court a regiment of Foot Guards parades daily at eleven, accompanied by its band, which plays several favourite pieces of music.

Clarence House, in the stable-yard, is the present town residence of Her Royal Highness the Duchess of Kent, near to which is the office of the Lord Chamberlain.

Marlborough House, Pall-mall, was built in 1709-10, by Sir Christopher Wren, for John Churchill, the great Duke of Marlborough. It has two wings, adorned with rustic stone-work. It is situated at the west end of the King's garden, on the park side, and fronts the park. Its court is very spacious, and finely paved; the offices are large, and on each side as you enter; the stairs mounting to the gate are very noble. Marlborough House was bought by the Crown, in 1817, for the Princess Charlotte and Prince Leopold, but the princess died before the assignment was effected. It is now settled upon His Royal Highness the Prince of Wales, as his separate residence, so soon as he shall have attained the age of eighteen years; but at present it is appropriated to the display of the Vernon Gallery, until suitable apartments can be had in the National Gallery.

Whitehall. The banqueting-house, Whitehall, is one of the earliest and finest specimens of the Italian style, and certainly ranks as one of the most beautiful buildings in the metropolis; it is, however, but a fragment of a grand design, by Inigo Jones, for a royal palace, which, had the whole plan been executed in the like spirit, would have been, perhaps, the most magnificent palace in the world.

Behind the banqueting-house is a fine bronze statue of James II., by Grinling Gibbons.

Kensington Palace, situated on the west side of pic-

turesque grounds of about two hundred and eight acres, open at all times to the public, who throng the fine walks and shady groves during the summer. The palace itself is a red-brick building, of no particular period, but a heterogeneous mass of apartments, halls, and galleries, presenting, externally, no single feature of architectural beauty; the united effect of its ill-proportioned divisions, being irregular and disagreeable. The orangery, a fine detached building, was build by Sir Christopher Wren. The palace contains a good suite of state apartments, but that which gives it the greatest interest, is the circumstance of its having been the residence of the Duke and Duchess of Kent, and the birth-place, in 1819, of her present Majesty, Queen Victoria, who, in the seclusion of its privacy, spent the greater part of her youthful days; and here, on her accession to the throne in 1837, was held her first council.

Lambeth Palace, the town residence of the Archbishop of Canterbury, is an irregular pile of building, situate on the south bank of the Thames, nearly opposite Westminster Abbey. Having been erected at different periods, it displays various kinds of architecture. The corners of the edifice are faced with rustic work; and the top is surrounded with a battlement. In the banqueting-room, which has an old carved ceiling, are the portraits of all the primates, from Archbishop Laud to the present time. The hall is a noble room, forming part of the old palace, converted into a library, which was founded by Archbishop Bancroft, in 1604, now containing upwards of twenty-five thousand volumes. The chapel, the oldest part of the edifice, was erected in the thirteenth century, by Boniface, Archbishop of Canterbury. It is Early English, with lancet-shaped windows, and a crypt; and has an old screen, put up by Archbishop Laud. In this chapel all the archbishops, from the time of Boniface, have been consecrated. The Lollards' Tower, at the western extremity of the chapel, contains a small room, wainscotted with oak, on which are inscribed several names and portions of sentences in ancient characters; and the walls are furnished with large rings to which the Lollards, and other persons confined for heretical opinions are

supposed to have been affixed. In the grounds, which are tastefully laid out, are two fig-trees of extraordinary size, said to have been planted by Cardinal Pole, about 1558. A new Gothic wing was added by Dr. Howley, the late Archbishop, and the domestic portion of the palace greatly enlarged and fitted up in a style of simple beauty—oak panelling prevailing throughout—contrasting finely with the fretted ceilings and ornaments.

CLUB-HOUSES,

Many of which are amongst the finest edifices in the metropolis.

The Union (of Grecian Architecture), South-west corner of Trafalgar-square. Members—Merchants, lawyers, and members of Parliament.

The United Service (Doric), 110, Pall-mall. Members—Officers of the army and navy.

The University (Grecian, Doric, and Ionian), Suffolk-street, Pall-mall. Members—Graduates of Oxford and Cambridge.

The Athenæum (Grecian), North-east corner of Pall-mall. Members—Literary and other gentlemen, patrons of literature and arts.

Junior United Service, Charles-street, Regent-street. Members—Officers of the army and navy.

The Travellers (Italian), 106, Pall-mall. Members—Those who have travelled out of the British Islands at least 500 miles in a direct line from London.

The Reform (Italian), 105, Pall-mall. Members—Whig and radical members of Parliament, and others of the same politics.

The Carlton (Venetian), 103, Pall-mall. Members—Members of Parliament, and others, of conservative politics.

Naval and Military (Italian), Pall-mall.

Oxford and Cambridge, 71, Pall-mall.

The Conservative (upper story Corinthian), St. James's-street.

Arthur's, 69, St. James's-street.

Brooks's, 60, St. James's-street.

Boodle's (with Corinthian pilasters), 28, St. James's-street.

White's, 38, St. James's-street.

Naval, Military, and County Service, 50, James's-street.

The Guards, 70, Pall-mall.

The Alfred, 23, Albermarle-street.

The Oriental, 18, Hanover-square. Members—Gentlemen who have resided or travelled in the East.

The Parthenon, 16, Regent-street.

The Erectheum, St. James's-square.

The Garrick, 35, King-street, Covent-garden. Members—Gentlemen connected with the drama.

The Gresham, corner of St. Swithin's-lane, King William-street, City. Members—Merchants and bankers.

The City, 19, Old Broad-street. Members—Merchants, bankers, and ship-owners.

Club Chambers, Regent-street.

MONUMENTS.

Monument to commemorate the Great Fire of London, 1666, architect, Sir Christopher Wren, completed in 1667, Fish-street-hill, City. Open daily. Admission, sixpence.

The York Column, surmounted with a colossal bronze statue of the Duke of York, by Sir Richard Westmacott, R.A. Erected in 1833 from designs by Mr. Wyatt; Carlton-gardens, St. James's-park. Open daily from twelve till four. Admission, sixpence.

The Nelson Column, surmounted by a colossal statue of Nelson by E. H. Bailley, R.A. Erected from designs by Mr. William Ruelton; Trafalgar-square, Charing-cross.

STATUES.

Henry VIII.; full length, over the entrance of Bartholomew's Hospital, Smithfield.

Edward VI.; Bronze statue, at St. Thomas's Hospital.

Edward VI.; Christ's Hospital.

Queen Elizabeth; at St. Dunstan's in the West, Fleet-street.

Charles I.; Bronze equestrian statue, Charing-cross.
Charles II.; Marble, Soho-square.
Charles II.; Christ's Hospital.
Charles II.; Bronze, Royal Hospital, Chelsea.
James II.; Bronze, Whitehall Gardens.
William III.; St. James's-square.
Queen Anne; St. Paul's Cathedral.
George I.; Equestrian, Leicester-square.
George I.; Equestrian, Grosvenor-square.
George II.; Marble, Greenwich Hospital.
George III.; Equestrian, Cockspur-street.
George IV.; Equestrian, Trafalgar-square.
Willian IV.; Granite, King William-street, City.
Queen Victoria; Marble, Royal Exchange.
Prince Albert; Marble, at Lloyd's.
William, Duke of Cumberland; Equestrian, Cavendish-square.
Edward, Duke of Kent; Bronze, Park-crescent, Portland-place.
Francis, Duke of Bedford; Bronze colossal statue, Russel-square.
Duke of Wellington; Equestrian, Royal Exchange.
Duke of Wellington; Equestrian, Hyde-park-corner.
Duke of Wellington; Marble, in front of the White Tower.
Lord Eldon; Wandsworth-road.
Sir Richard Whittington; Highgate.
Sir Robert Clay; St. Thomas's Hospital.
Sir Hans Sloane; Apothecaries' Gardens, Chelsea.
Major Cartwright; Bronze, Burton-crescent.
William Pitt; Bronze colossal, Hanover-square.
Charles James Fox; Colossal statue, seated, Bloomsbury-square.
George Canning; Bronze colossal, Old Palace-yard, Westminster.
William Huskisson; Marble colossal, at Lloyd's.
Thomas Guy; Guy's Hospital.
Robert Aske; Haberdashers' Almshouses, Hoxton.
James Hulbert; Fishmongers' Almshouses, Newington.

Achilles; Bronze, Hyde-park. To the Duke of Wellington, and his companions in the Peninsular War.

The Obelisk; memorial to John Wilkes, Farringdon-street.

The Obelisk; memorial to Brass Crossby, Blackfriars-road, Southwark.

GOVERNMENT OFFICES.

The Tower of London, on the bank of the Thames, below London Bridge. The chief objects to be viewed are—the White Tower, the Horse Armoury, Queen Elizabeth's Armoury, the Regalia Room, and the Waterloo Barracks. Open daily, from ten till four o'clock. Admission, one shilling.

The Treasury is an extensive edifice, the principal or north front of which faces the parade, St. James's-park; it is built of stone, from the designs of Gent, and consists of three stories, displaying the Tuscan, Doric, and Ionic orders of architecture, the whole surmounted with a pediment. That portion of the building fronting Whitehall has recently been new-fronted, and now forms the north wing of that handsome pile of buildings occupied by the Privy Council and the Board of Trade. The Treasury Board holds its meetings here: at the head of the table used for that purpose, is still placed the royal throne. The premier, who is always first Lord of the Treasury, has an official residence within these walls.

The Privy Council Office, Whitehall. The council chamber, which is on the first floor, at the west end, is a magnificent apartment, reaching the whole height of the edifice; scagliola Ionic columns, imitating Sienna marble, the capitals of which are in imitation of white marble, ornament the sides; the ceiling is slightly curved, and from the centre, an elegant lantern is pendant. Here the Privy Council sits to decide appeals from the subordinate tribunals of the East and West Indies; and here the minutes of the Privy Council of the Crown are kept.

The Horse Guards, Whitehall. It consists of a centre and two wings, having an arched roadway, forming the principal entrance to St. James's-park, so low and mean,

that on the first attempt to drive the royal state carriage under it, the crown and ornaments upon the roof were obliged to be removed to allow it to pass through. The apartments of the south wing are in the occupation of the Secretary of War, his assistants, and clerks, who manage all the fiscal business of the army. The Commander-in-Chief's apartments are in the north wing, and consist of a waiting-room, a good-sized apartment facing Whitehall, the walls of which are covered with military maps; the audience-room, facing St. James's-park, in which the Commander-in-Chief holds his levees. Levees are held by the Secretary at War on Tuesdays, and by the Commander-in-Chief on Thursdays, lasting from eleven till four o'clock; and at which ladies invariably have the precedence of audience. This apartment is the official head-quarters of the British army, and in it all the great military operations of the late war were planned. Projecting into the street are two stone alcoves, in which mounted sentries, in full uniform, are daily on guard, from ten till four o'clock, being changed every two hours; the ceremony of changing guard is somewhat striking, and generally attracts a numerous concourse of visitors.

The Admiralty, Whitehall. It is a heavy building, receding from, but communicating with the street, by advancing wings; the portico of the main building is a tasteless specimen of the Ionic order. The court is enclosed by a stone screen, and decorated with naval emblems. Here the higher departments of the extensive business of the navy are transacted, and the Lords of the Admiralty have houses.

The Ordnance Office, 86, Pall-mall. A noble mansion, but having no architectural beauty. A portion of the extensive civil service of the Ordnance department is conducted in this building, whilst other branches of the Ordnance have offices in the Tower.

Somerset House, Strand, one of the finest buildings in the metropolis; occupies a space about eight hundred feet in width, and five hundred feet in depth, and is built in the form of a quadrangle, with a large court in the centre. It is altogether a magnificent pile, whilst its

ornamental details are very elaborate. "The exterior of Somerset House," Mr. Papworth says, "is considered to be the perfection of masonry, and the sculptures that decorate the various parts, are not equalled by the ornamental accessories of any of our great national buildings: the decorations of the interior are no less entitled to applause. The elegant simplicity of the building as a whole, the proportion of its parts, and their relative accordance, may vie with the noblest structures in the metropolis; and, in some respects, may be pronounced superior to any." The Ionic, Composite, and Corinthian capitals to be seen in various parts of the building, were copied from models executed at Rome, under the direction of Sir William Chambers, and imitated, both in point of forms and manner of workmanship, from the choicest antique originals. The sculptors employed on the decorative accessories, were Carlini, Wilton, Gerracci, Nollekens, and Bacon.

The building contains apartments devoted to the use of the Royal Society, the Society of Antiquaries, the Geological Society, the Astronomical Society, the School of Design, the Navy Office, the Navy Pay Office, the Stamp Office, the Income Tax Office, the Auditorship of the Exchequer, the Hawker's Office, the Chancelries of Cornwall and Lancashire, the Legacy Duty Office, the Pamphlet Office, the Poor Law Board, the Registration of Designs, and the General Registration Office.

The Custom House, Lower Thames-street. This grand and extensive pile was first opened for public business on the 12th of May, 1817. The building is four hundred and ninety feet in length, and one hundred and eight feet in breadth, and is divided into numerous rooms and offices, for the multifarious purposes connected with the collection of the Customs. The northern elevation, fronting Thames-street, is plain and simple. The south front, towards the river, is of a more ornamental character, the central compartment projecting forwards, and the wings having a hexastyle detached colonnade, of the Ionic order.

The two principal entrances are in Thames-street, and

lead by halls, more commodious than vast, to the grand staircase conducting to the porticos, which are on each side of the Long-room; the latter, which is in the centre, is one hundred and ninety feet long, and sixty-six feet wide, and is the principal object of interest, being probably the largest apartment of the kind in Europe. Some of the offices are fire-proof, in which are deposited nightly, the books, papers, and other important documents.

Besides the warehouses and cellars, there are about one hundred and seventy distinct apartments in the Custom House, in which the officers of each department transact their business. The Custom House is managed by thirteen directors, or commissioners, two filling the functions of president and vice-president; also a secretary, clerks, and a great number of subalterns. The amount of duty collected in the Custom House of London, equals the entire amount collected in all the other ports of the kingdom.

Excise Office, Broad-street. An extensive edifice, plain in design, but of commanding aspect; consisting of two ranges, one of stone the other of brick, separated from each other by a large court; erected in 1768. Many persons state, that, for grandeur of mass and greatness of manner, combined with simplicity, it is not surpassed by any building in London.

The entrance is by a large yard, or forecourt, around which are all the offices for the transaction of the chief business of England, which is conducted by commissioners; who also decide, without appeal, upon cases of seizure for frauds against the revenue. The number of persons employed here is about five hundred.

The Mint, Tower-hill, is a handsome edifice in the Grecian style, having a centre and wings, and an elevation of three stories. The centre is ornamented with columns, above which is a pediment, containing the royal arms; the wings have pilasters, and the roof is enclosed with an elegant balustrade. The gold and silver bullion necessary for coining purposes, is usually supplied by the Bank of England, but it is competent to any individual to send in gold bullion to the Mint, and have it converted into

sovereigns. Open from ten till four o'clock. Admission by order, granted by the Master of the Mint, or on application to the Deputy Master.

East-India House, Leadenhall-street. This noble edifice was erected in 1798-9, from the designs of Mr. R. Jupp. The façade, which is two hundred feet in length, is distinguished by a handsome hexastyle Ionic portico, fluted, supporting an enriched entablature and pediment, and two wings surmounted by a balustrade. The frieze is sculptured with ornaments, imitative of the antique; and the tympanum of the pediment is filled with characteristic sculpture.

The affairs of this mighty Company are managed by a Court of Proprietors, and a Court of Directors. Their duties pertain to all matters relating to Indian affairs, subject to the approbation of the Board of Control. They are divided into three committees; the Finance and Home Committee; the Political and Military Committee; and the Revenue, Judicial, and Legislative Committee.

The Board of Control, for the affairs of India, Canon-row, Parliament-street, is a neat structure, ornamented with an Ionic portico. The affairs of the British Empire in India are under the direction of this board.

Colonial Office, 14, Downing-street. A government office for conducting the multifarious business between Great Britain and her numerous colonies; where two or three able men, aided by a few clerks, attempt to manage the public affairs of some forty communities, in every quarter of the globe, and usually, of necessity, do mischief. The head of the office is called the Secretary of the Colonies, and is always a cabinet minister. In a small waiting-room to the right of the entrance, met, for the only time in their lives, the heroes of Waterloo and Trafalgar; the Duke of Wellington, then Sir Arthur Wellesley, knew Lord Nelson from his portraits, but Nelson, who did not know the Duke, was so struck with his conversation, that he stepped out of the room to inquire his name.

The General Post Office, St. Martin's-le-Grand. Its frontage is four hundred feet in length, consisting of a

centre and two wings, having a portico of the Ionic order, with fluted columns, seventy feet in breadth, and thirty feet deep. The great façade, with its triple colonnade, is particularly good, as also the inner court, which occupies the entire centre of the building, and is highly effective, and quite in character with the front. The great hall, which is a public thoroughfare, is eighty feet long, sixty feet wide, and fifty-three feet high; around which are the boxes for the reception of letters and newspapers. Letters may be posted here until six o'clock; and are received, on payment of an extra penny, until seven; and until half-past seven at an additional charge of sixpence.

Letters having an insufficient address are posted in the hall, where the persons for whom they are intended can insert their address, and the letters are then delivered accordingly. In the year 1848, there were more than a million of dead letters, 10,000 of which contained money to the amount of £421,500.

Chief Money Order Office, Aldersgate-street, nearly opposite the General Post Office. The number of post-masters and receivers authorized to issue and pay Money Orders throughout the United Kingdom is 14,487. Open daily from ten till four o'clock.

LAW INNS.

Inns of Court belong to societies, and are governed by the benchers of each society.

The Temple has its principal entrance at Temple Bar, in Fleet-street. It is a very irregular and extensive pile of buildings, with passages, archways, and courts in great variety. Its beautiful church and its garden we have elsewhere spoken of. The Hall of the Inner Temple is built of Portland stone, and is internally highly decorated. The Hall of the Middle Temple is spacious and elegant; it is 100 feet long, 60 feet wide, and 40 feet in height. The screen at the east end is a most exquisite and elaborate specimen of Elizabethan wood carving, not to be excelled in London.

Lincoln's-inn, situated south of Holborn and adjoining Chancery-lane. The principal entrance is from Lincoln's-

inn-fields, through a handsome gateway. The New Hall is especially worthy of attention; it is built of red brick and stone, with an open timbered roof, in the character of the sixteenth century. The Chapel is situated north of the Old Hall; its appearance is remarkably impressive—an effect produced by the chastened light transmitted by the stained glass in the very fine windows, of which there are three on either side, the beautiful colours of which far surpass the generality of works in this style of art.

Gray's-inn, on the north side of Holborn. Its entrances are all exceedingly mean, and the buildings generally of a very ordinary kind. The Hall was built in 1560, and is an interesting specimen of the architecture of that period—the roof being of oak, handsomely carved. This Inn has a spacious and pleasant garden.

The Inns of Chancery are Lyon's-inn, Newcastle-street, Strand; Symond's-inn, Chancery-lane; New-inn, Wych-street, Strand; Barnard's-inn, Holborn; Clifford's-inn, Fleet-street; Clement's-inn, Strand; Furnival's-inn, Holborn; Staple's-inn, Holborn; and Thavie's-inn, Holborn; some of which are very ancient.

COMMERCIAL EDIFICES.

The Royal Exchange, Cornhill. As a building, it is an honour to the city, and one of the finest structures which the present age has yet produced, in its full completion; and has deservedly placed the architect in the first rank of his profession. The principal front faces the west, and exhibits a handsome portico of eight Corinthian columns, incontestibly the finest thing of the kind in the metropolis, supporting a tympanum, richly sculptured. The east end of the building is ornamented with a clock-tower, that contains a set of chimes, consisting of seventeen bells, the largest, or tenor bell, weighing a ton. The dimensions of the area are 170 feet by 112, and of the open part 116 feet by 58.

The suite of rooms belonging to Lloyd's occupies a large portion of the first floor on the east and south sides, the principal room being a magnificent apartment, 90 feet long by 40 feet wide; and the subscribers' room of the

same size. The 'Change hours, when merchants do most congregate, are between 2 and 4 o'clock.

The Bank of England, Threadneedle-street—the largest establishment of the kind in the world—was founded in 1694. The last renewal of its charter in 1833, extended it to 1855. The greater part of the vast pile called the Bank, is of stone, and most of the buildings are fire-proof. The space covered by the whole range of buildings, is an irregular area of near 8 acres. The principal entrance is in Threadneedle-street. In its construction, utility alone, and not architectural beauty, has been aimed at.

The rotunda is a spacious circular chamber, with a lofty dome, 57 feet in diameter, crowned by a lantern, the divisions of which are formed by the architectural figures called Caryatides; where the public dividends are paid, amounting to about £25,000,000 annually. The court-room, the pay-hall, the different offices, the vestibule, the governor's apartments, directors', cashiers', and the necessary offices, employ eleven hundred clerks; and the annual charge for salaries, pensions, house expenses, &c., may be stated at about £250,000.

The affairs of the Bank are regulated by a governor, deputy-governor, and twenty-one directors, who are annually elected. The room in which the directors meet is called the Bank Parlour.

Coal Exchange, Lower Thames-street, nearly opposite Billingsgate; opened by Prince Albert in 1850. The building covers an area of four thousand superficial feet, it is faced with Portland stone, and its height is about 70 feet to the top of the dome.

Mansion House, Mansion House-street; the official residence of the lord mayor, during the term of his mayoralty. It is a large and substantial building, of Portland stone, and has a portico of six fluted Corinthian columns, elevated upon a lofty basement: the same order being continued both under the pediment and on each side. The basement story is rustic, and on each side are steps leading to the portico; in the centre of which is the principal entrance.

The lord mayor, as the chief magistrate of the city, has

the right of precedence in the city, before all the royal family.

The lord mayor, or his *locum tenens*, sits in the justice-room, on the left-hand side of the hall, entering under the portico, every day about twelve o'clock, as chief magistrate of the city.

Guildhall, King-street, Cheapside. It is 153 feet long, 50 feet broad, and 58 feet high; and is sufficiently large to contain seven thousand persons. A public dinner is annually given in this Hall, on the 9th of November, by the new lord mayor, on the occasion of his being sworn into office, on which occasion Her Majesty's ministers, and the great law officers of the crown, invariably attend. At the upper end, or dais, called the hustings, the courses are all hot, but at the lower end, or body of the Hall, only the turtle, of which there are provided two hundred and fifty tureens.

The Guildhall, or City of London Library, contains a large collection of early printed plays, and pageants connected with the city; and numerous antiquities, discovered in making the excavations for the new Royal Exchange; also, in an appropriate glass-case, a deed of conveyance, with Shakspeare's autograph attached, for which the corporation gave £147, at a public sale. Admission to the Hall, free: to the council chamber, open daily from ten till three o'clock, a small gratuity is expected by the attendant.

Trinity House, on the north side of Trinity-square, Tower-hill. It has the superintendence of the shipping interest, examines and licenses pilots for the Thames, erects lighthouses and sea-marks, and manages other matters connected with maritime affairs. The Duke of Wellington is the present master. Open daily. Admission, by order of the secretary.

The Old Corn Exchange and the New Corn Exchange, both stand in Mark-lane, and hold markets on Mondays, Wednesdays, and Fridays.

The Hall of Commerce, Threadneedle-street; its front is ninety-two feet in length, and fifty-four feet in height. At present unoccupied.

The Auction Mart, Bartholomew-lane, Lothbury. A spacious and commodious building, erected by a company, composed principally of auctioneers, for the sale of estates, annuities, shares in public institutions, pictures, books, and other property, by public auction.

Stock Exchange, Capel-court. A neat, plain building, opened in March, 1802. No person is allowed to transact business here unless ballotted for annually by a committee: persons so chosen subscribe fifteen guineas each. The hours of business are from ten to four o'clock.

Commercial Hall, or *Sale Room*, Mincing-lane; erected by subscription, for the sale of colonial produce of every description. It contains five public sale-rooms, a large coffee-room, several show-rooms, and numerous counting-houses, let out to various merchants.

SCHOLASTIC EDIFICES.

University of London, Somerset House. A government institution, established in 1837, for conferring degrees, after careful examinations, on students educated at institutions in connection with the University—as University College, King's College, Highbury College, and others situated in various parts of the kingdom. Chancellor, the Right Honourable the Earl of Burlington

University College, Upper Gower-street. It is a noble building of the Grecian order of architecture, 420 feet in length, and nearly 200 feet in depth, having in the centre a handsome portico, of the Corinthian order, elevated on a plinth to the height of the first story, approached by numerous steps. The pediment is supported by twelve Corinthian columns, and in the tympanum is an allegorical *bas relief*. Behind the pediment is a cupola, finished by a lantern light, in imitation of a Grecian Temple, crowning a grand octagon saloon. North of this is the Museum of Natural History, 118 feet in length; corresponding with it, on the south, is the library, of the same dimensions, a smaller library, and rooms for the librarian. The building also contains six spacious lecture-rooms, two theatres, several rooms for the professors, a laboratory, museum of *materia medica*, an anatomical

museum, the great hall, 90 feet by 45 feet, intended for public examinations; two cloisters, for the exercise of the pupils, during the intervals of lecture, 107 feet by 23 feet; refreshment-rooms, and residences for the steward and housekeeper. In the grand saloon are preserved the original models of the principal works of John Flaxman, R.A., the greatest of English sculptors. The college was established through the great exertions of the late Thomas Campbell, the poet, and Lord Brougham, its president, and is a proprietary institution, for the general advancement of literature and science, by affording young men adequate opportunities for obtaining literary and scientific education at a moderate expense. The education includes all branches except theology.

University Hall, Gordon-square, is a handsome collegiate building, erected in 1849, for the reception of students generally, and is now tenanted by a principal, vice-principal, and a moderate number of students of University College. Theology, excluded by the rules of the college, will here form the subject of lectures, with other means of instruction.

King's College, forming the east wing of Somerset House, Strand. The entrance is a neat, though confined semi-circular archway from the Strand, and the building extends to the Thames, occupying an area of between 50,000 and 60,000 feet: the western front is 304 feet in length, and the interior, which is very capacious, is well calculated for its intended object. In the centre of the principal floor is the chapel, under which is the hall for examinations, &c.

The college consists of two departments—a college, in which is a school of medicine and surgery for senior, and a grammar school for junior students, under the superintendence of a principal and thirty masters.

The Royal Institution, Albermarle-street, Piccadilly, established and incorporated through the exertions of Count Rumford, for facilitating the introduction of useful and mechanical inventions and improvements; and for teaching, by courses of philosophical lectures and experiments, the application of science to the common purposes

of life, whence the motto of the institution. The building is spacious, and well adapted for the purposes to which it is applied. It has an imposing front, consisting of fourteen fluted half-columns placed upon a stylobate; and, occupying the height of three floors, support an entablature and the attic story. Open daily, from ten to four. Admission, by member's order.

Law Institution, Chancery-lane. The present edifice was commenced in 1829, from designs by Mr. Vulliany, and the north wing added in 1849. The grand portico of Portland stone presents a beautiful elevation of four Grecian Ionic columns, and two side pilasters, supporting an entablature and pediment; the former, to attain the requisite altitude, is placed on pedestals, which, as well as the basement story and podium of the inner wall of the portico, are of Aberdeen granite.

Gresham College, Basinghall-street, corner of Gresham-street. A handsome building of the enriched Roman style of architecture, with an attached Corinthian portico on the principal entrance front. The interior contains a large library and professor's room on the ground-floor, a lecture-room on the first floor, capable of holding upwards of five hundred persons, separate rooms above for the different professors, together with apparatus-rooms in the basement, apartments for the attendants, &c. The Gresham Lectures were instituted by Sir Thomas Gresham, on seven liberal sciences, to be gratuitously delivered to the public. They are delivered during the four law terms, at twelve o'clock at noon in Latin, and at one o'clock in English, except those on geometry and music, which are delivered in the evening at seven.

Redcross-street Library was established in 1771, by Daniel Williams, D.D., for the benefit of dissenting clergymen. The library, of 20,000 volumes, is open to respectable persons of every class, daily, throughout the year, except on Saturdays and Sundays.

College of Physicians, Pall-mall East. This commodious building, in the Grecian Ionic style, consists of two stories, with decorated windows, having a noble portico. An air of sumptuous elegance pervades the interior,

made the more impressive by its airy and noble proportions. It contains many portraits and busts of remarkable men—the great Harvey, Andrew Vesalius, Thomas Brown, Sydenham, Mead, Baillie, &c. The library is a splendid room, lighted by three lanterns in the ceiling of the most elegant character. Admission may be obtained by an order from a fellow.

College of Chemistry, 16, Hanover-square, was founded for the purpose of affording instruction in practical chemistry, at a moderate expense, and for promoting the general advancement of chemical science, by means of a well-appointed laboratory.

Herald's College, on the east side of Bennet's-hill, Doctor's-commons. A brick edifice; the front is ornamented with rustic-work, on which are placed four Ionic pilasters, supporting an angular pediment; the sides have arched pediments, also supported by Ionic pilasters. Within is a large room for keeping the Court of Honour; and all the offices are spacious and convenient. It belongs to a corporation of great antiquity, consisting of thirteen members—three kings-at-arms, six heralds-at-arms, and four pursuivants-at-arms, all nominated by the Earl Marshall of England, holding their places by patent during good behaviour.

Sion College, London-wall. Founded by Dr. White, rector of St. Dunstan's-in-the-West, for the improvement of the London clergy. The whole body of rectors and vicars within the city are fellows of this College, and all the clergy in and near London have free access to its extensive and valuable library. The edifice consists of plain brick buildings, surrounding a square court. Under the library are almshouses for twenty poor persons.

Institution of Civil Engineers, 25, Great George-street, Westminster.

Royal Institute of British Architects, 16, Lower Grosvenor-street.

Veterinary College, Camden Town. The buildings are extensive, and admirably adapted for their various purposes.

Westminster School, Dean's-yard, Westminster.—Founded by Queen Elizabeth, for forty boys, called the

"Queen's Scholars," who receive an education to prepare them for the university. Dryden, Locke, Prior, Rowe, Churchill, and Warren Hastings, were educated at this school.

City of London School, Milk-street, Cheapside, is a handsome building, in the Elizabethan style, possessing a number of free scholarships.

St. Paul's School, St. Paul's Churchyard. Founded in 1509. The present building consists of a centre and wings, ornamented with a colonnade. The school is divided into eight classes, or forms, and is under the superintendence of a master, an usher, and a chaplain. The Mercers' Company are the trustees and guardians. The immortal Milton was here educated.

Merchant Tailors' School, Suffolk-lane, Cannon-street, was founded in 1561. The present spacious fabric, erected by Sir Christopher Wren, whose father had been educated at the school, is supported on the east side by stone pillars, forming a handsome cloister, containing apartments for the ushers. Adjoining is the chapel, and a well-furnished library. Three hundred boys receive a classical education, one-third of them free, and the rest for a very small stipend. It sends several scholars annually to St. John's, Oxford, in which there are forty-six fellowships belonging to it.

MARKETS.

Smithfield Market, in the heart of the City.

Newgate Market, between Newgate-street and Paternoster-row.

Leadenhall Market, Leadenhall-street.

Borough Market, York-street, near St. Saviour's Church.

Farringdon Market, Farringdon-street.

Islington Cattle Market, Balls Pond.

Covent Garden Market, Strand.

Hungerford Market, Strand.

Billingsgate Market, Thames-street.

THE DOCKS.

St. Katherine's Docks, near the Tower of London.

The quays have a frontage of 4,600 feet, with a depth of 90 feet, over which is a fire-proof ceiling; the two docks have a water area of eleven acres.

London Docks, near St. Katherine's Docks. The three basins cover a water area of twenty-eight acres, and the outer walls enclose altogether more than seventy acres.

East and West-India Docks, at Limehouse and Blackwall. Their water area is one hundred and twelve acres. Open daily; admission by tickets, obtained for East-India Docks at No. 11, St. Helen's-place, for West-India Docks at No. 8, Billeter-street.

Commercial Docks, Deptford. The water area is fifty acres. Open daily; admission by tickets, obtained at No. 106, Fenchurch-street.

CITY TRADES' HALLS.

Merchant-Taylors' Hall, Threadneedle-street.

Goldsmiths' Hall, Foster-lane; built of Portland stone, in the Italian style.

Mercers' Hall, Cheapside.

Fishmongers' Hall, London Bridge; faced of Portland stone, in the Grecian Ionic style.

Ironmongers' Hall, Fenchurch-street; built of Portland stone.

Grocers' Hall, Grocers'-hall-court, Poultry.

Drapers' Hall, Throgmorton-street.

Barbers' Hall, 33, Monkwell-street, Cripplegate.

Armourers' Hall, 81, Coleman-street; built of brick.

Stationers' Hall, Stationers'-hall-court, cased with Portland stone.

Salters' Hall, St. Swithin's-lane.

Clothworkers' Hall, Mincing-lane, Tower-street; built of brick.

Sadlers' Hall, Cheapside.

Apothecaries' Hall, Water-lane, Blackfriars.

Vintners' Hall, Upper Thames-street.

Skinners' Hall, Dowgate-street; dining hall of Italian style.

Painter-Stainers' Hall, 9, Little Trinity-lane, in the Corinthian style.

BRIDGES.

The Thames Tunnel connects Wapping and Rotherhithe; its length is 13,000 feet, it has two arched passages 16 feet wide and 15 feet high, each passage having a carriage-way in the middle. Toll, one penny.

London Bridge. This noble bridge is situated at the eastern extremity of Gracechurch-street and King William-street, and connects the city of London with the borough of Southwark. It consists of five immense semi-elliptical arches, exceeding in extent of span those of any other stone-bridge in Europe. Passengers pay no toll.

Southwark Bridge, approached from Queen-street, Cheapside, is of cast-iron, and consists of three grand arches, the centre one of which is 240 feet span, and those at the ends 210 feet each. Toll for foot passengers, one penny.

Blackfriars' Bridge. This elegant structure, which leads from Farringdon-street to the Blackfriars'-road, and consists of nine elliptical arches, the centre one being 100 feet wide. The whole length of the bridge is 995 feet. No toll.

Waterloo Bridge, approached from the Strand through Wellington-street, near Somerset House, is perhaps the finest structure of the kind in the world. It is built of Cornish moor-stone, and consists of nine elliptical arches of 120 feet span, 35 feet high. Toll for foot passengers, one halfpenny.

Hungerford Bridge, approached from the Strand, near Charing-cross, through Hungerford-market, is a chain-bridge for foot passengers. Toll, one halfpenny.

Westminster Bridge, near the Houses of Parliament, consists of fifteen arches, and is 1223 feet in length. It is just one hundred years old, but in rather a crazy state. From the Lambeth side it affords a fine view of the New Houses of Parliament. No toll.

Vauxhall Bridge, at the end of Vauxhall-road. It consists of nine cast-iron arches, each of 78 feet span, resting on stone piers. Its length is 860 feet. Toll for foot passengers, one penny.

Battersea Bridge, approached from the King's-road through Beaufort-street, is an old wooden structure. Toll for foot passengers one halfpenny.

BAZAARS AND ARCADES.

The Pantheon, Oxford-street; built in the Grecian style.
Soho Bazaar, Soho-square.
Burlington Arcade, Piccadilly.
Lowther Arcade, West-Strand; built in the Grecian style.
Royal Bazaar, New Oxford-street; in the Italian style.
The Pantechnicon, Motcomb-street, Belgrave-square.
Exeter 'Change, Wellington-street, Strand.
Baker-street Bazaar, Baker-street.

CHURCHES.

St. Paul's Cathedral, between Cheapside and Ludgate-hill; the most remarkable and most magnificent edifice in the metropolis, but disgraced by charges for viewing the different parts of it.

Westminster Abbey, near the Houses of Parliament; containing the tombs of the departed great of the land.
St. Saviour's, Southwark; built in the English style.
St. Magnus the Martyr, Thames-street, London Bridge.
St. Dunstan-in-the-East, St. Dunstan's-hill, Tower-street.
St. Mary Woolnoth, Lombard-street.
St. Stephen's, Walbrook.
St. Mary-le-Bow, Cheapside.
All Hallow's, Bread-street.
Christ's Church, Newgate-street.
St. Sepulchre's, Skinner-street.
St. Andrew's, Holborn-hill.
St. Bride's, Fleet-street.
Temple Church; built of Purbeck-marble.
St. Dunstan's-in-the-West, Fleet-street; tower composed of Kelton stone; Gothic style.
St. Clement Danes, Strand; Corinthian style.
St. Mary-le-Strand, Strand; steeple of Corinthian style.
St. John the Baptist, Savoy-street, Strand.
St. Paul's, Covent Garden; portico in Tuscan style.

St. Martin-in-the-Fields, St. Martin's-lane.
St. Anne's, Dean-street, Soho.
St. James's, Piccadilly; in the Basilical style.
Chapel Royal, Whitehall.
St. Margaret's, Westminster.
St. John the Evangelist, Millbank, Westminster; built of stone, with porticos in the Doric style.
St. Mary's, Lambeth-walk.
St. Philip's, Regent-street.
St. George's, Hanover-square; porticoes of Corinthian style.
All Souls, Langham-place, Regent-street; chiefly Ionic and Corinthian style.
St. Marylebone, High-street, Marylebone.
St. Marylebone, New-road; Corinthian style, chiefly.
St. Pancras New Church, Euston-square, New-road; chiefly Ionic style.
St. George's, Hart-street, Bloomsbury; chiefly Corinthian style.
St. Giles's-in-the-Field's, High-street, Bloomsbury; exterior of Portland stone, and style a combination of Doric and Ionic order.
St. Bartholomew the Great, West Smithfield; style is Norman.

POLICE AND PRISONS.

The London Police is perhaps the best conducted institution in the country; its force consists of about 5,000 men, dressed in blue, with a letter marked on the collar indicating the divisions and a number corresponding to the name of the bearer on the list of his division; the first sixteen numbers indicating the sergeants of the force. Strangers at a loss for their way, or requiring assistance in any difficulty, may always with confidence apply to the first policeman they meet, who will be sure to behave with great civility and generally with intelligence. In cases of improper conduct on the part of cab-drivers and public coachmen, or of leaving articles in public conveyances, application should be immediately made in Scotland-yard, not far from Charing-cross.

The Police Courts are held at the Mansion-house; Guildhall; in Bow-street; High-street, Marylebone; Queen's-square, Westminster; Great Marlborough-street; Worship-street, Shoreditch; Whitechapel, Lambeth-street; Union-street, Southwark; and at the Thames Police-office, Wapping.

The Central Criminal Court is held in the Old Bailey, and its jurisdiction extends for ten miles in every direction from St. Paul's Cathedral.

Newgate Prison, Newgate-street. The Secretary of State, Lord Mayor, and the Sheriffs grant orders to view.

House of Detention, Clerkenwell, for Middlesex county prisoners awaiting trial.

House of Correction, Coldbath-fields, Clerkenwell. This immense prison has 134 officers, and has a beautiful flower-garden cultivated by the prisoners.

Compter, Giltspur-street, Newgate-street, house of correction and compter.

Bridewell, Bridge-street, Blackfriars, a house of correction, chiefly for city apprentices.

Whitecross-street Prison, for debtors appertaining to the sheriffs of London and Middlesex.

Queen's Bench, Borough-road, Southwark, for debtors, and prisoners for libel and misdemeanour from the court of Queen's Bench.

Horsemonger-lane Gaol, Southwark, county gaol for Surrey.

Tothill-fields' Prison, Francis-street, Westminster, chiefly for male and female convicts.

Penitentiary, Millbank, is the largest prison in England, the general depot for transports.

Model Prison, Pentonville, for the solitary system, on the American plan.

RAILWAYS.

The London Terminus of the *North Western* Railway is at Euston-square; *Great Western*, at Praed-street, Paddington; *Great Northern*, at Maiden-lane, King's-cross; *Eastern Counties*, at Shoreditch; *Blackwall*, at

London-street, Fenchurch-street; *Greenwich*, at Tooley-street, London Bridge; *North Kent*, at the same place; *Croydon*, at the same place; *Brighton*, at the same place; *South Eastern*, at the same place; *South Western*, at Waterloo-road, Lambeth; Richmond, at the same place.

HOSPITALS AND CHARITIES.

The *Royal Hospitals* are, Greenwich Hospital; Chelsea Hospital; Military Asylum, King's-road, Chelsea; and Bethlehem, St. George's-fields, Lambeth.

The *Endowed Hospitals* are, St. Bartholomew's, Smithfield; St. Thomas's, Wellington-street, Southwark; Guy's, St. Thomas's-street, Southwark; London, Whitechapel-road.

The Hospitals supported by *Voluntary Contributions* are, the Free Hospital, Gray's-inn-road; Charing-cross Hospital; Middlesex, Charles-street, Oxford-street; University College Hospital, Upper Gower-street; King's College Hospital, Portugal-street, Lincoln's-inn-fields; Westminster Hospital, near the Abbey; St. George's, Hyde-park-corner; St. Mary's, Cambridge-place, Paddington; Consumption Hospital, Fulham-road, Brompton; Fever Hospital, Liverpool-road, Islington; Ophthalmic Hospital, Strand; St. Luke's, Old-street, City-road; Foundling, Guildford-street; St. Katherine's, Regent's-park; Caledonian Asylum, Copenhagen-fields, Islington; Blind School, St. George's-fields, Lambeth.

Lying-in Hospitals are five in number: the British, Endell-street, Long-acre; City of London, Old-street, City-road; Queen Charlotte's, Lisson-grove; General, York-road, Lambeth; and Queen Adelaide's, Queen-street, Golden-square.

Deaf and Dumb Asylum, Kent-road; the Magdalen, Blackfriars-road; the Female Orphan Asylum, Westminster-road.

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